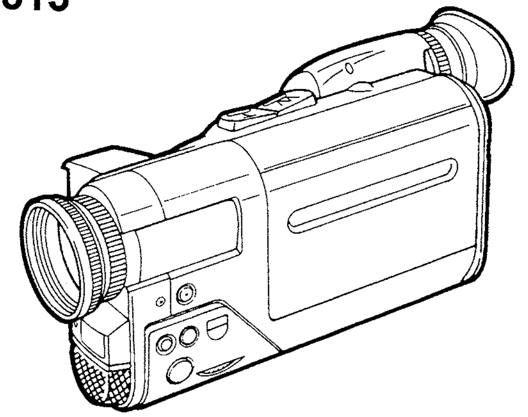
HITACHI

TK | No.3670E,G

VM-H37E

SERVICE MANUAL
Wartungsanleitung

V03813



MANUAL RELATED TO THE VM-H37E

TITLE	MODEL	MANUAL No.
POWER ADAPTER/ CHARGER	VM-AC80E(R)	No. 3614E, G, F

Anleitung für das Modell VM-H37E

Benennung	Modell	Anleitung-Nr.
Netz-/Ladegerät	VM-AC80E(R)	Nr. 3614E,G,F

Hi 8

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Änderungen der Technischen Daten und Teile im Sinne ständiger Verbesserung vorbehalten.

8mm VIDEO CAMERA/RECORDER
8-mm-Video-Kamerarecorder

July 1992 TOKAI Consumer Electronics Division

SPECIFICATIONS

■ General

Power requirements	6V DC
Power consumption	7.0 watts (when "FOCUS M" is displayed in the viewfinder)
Operating temperature	0°C to 40°C
Operating humidity	<80%
Storage temperature	−20°C to 50°C
Dimensions	80.5(W) x 104(H) x 238(D) mm
Weight	Approx. 560 gr (without battery pack and cassette)

■ Video Recorder Section

Format	8mm
Record/playback system	Four video record/playback heads
Video signal	PAL colour & CCIR monochrome signals 625 lines
Tape speed	SP: 20.05 mm/sec.
Video output	1.0 Vp-p, 75 ohm
Audio output	−8 dBs, less than 1K ohm
Fast forward/rewind time	Less than 10 minutes with P5-90 cassette

■ Camera Section

Scanning	625 lines/50 fields/25 frames
Required minimum illumination	2 lux
Camera device	1/3" C.C.D
Lens diameter	34 mm

Technische Daten

■ Allgemeines

Stromversorgung	6V Gleichstrom
Leistungsaufnahme	7,0W ("FOCUS M" wird in dem Sucher angezeight)
Zulässiger Temperaturbereich bei Betrieb	0°C bis +40°C
Zulässige Luftfeuchtigkeit bei Betrieb	<80%
Zulässiger Temperaturbereich bei der Aufbewahrung	−20° bis +50°C
Abmessungen (B x H x L)	80,5 x 104 x 238 mm
Gewicht	ca. 560 g (ohne Akku und Cassette)

■ Video-Aufnahmesystem

Format	8 mm
Aufnahme-/Wiedergabesystem	Vier Video-Aufnahme-/Wiedergabeköpfe
Videosignal	PAL-Farb- und CCIR-Schwarzweißsignale, 625 Zeilen
Bandgeschwindigkeit	SP: 20,05 mm/sek.
Video-Ausgangspegel	1,0 Vs-s, 75 Ohm
Audio-Ausgangspegel	−8 dB, weniger als 1 kOhm
Schnellvorlauf-/Rücklaufdauer	Weniger als 10 Minuten mit Cassette P5-90

■ Kamera

Abtastung	625 Zeilen/50 Halbbilder/25 Vollbilder
Mindestbeleuchtung	2 Lux
Aufnahmeelement	1/3-Zoll CCD-Bildelement
Objektivdurchmesser	34 mm

CAUTIONS ON LITHIUM BATTERY REPLACEMENT

Replace the lithium battery correctly, otherwise it may explode.
Do not replace the battery with one other than those specified by manufacturer (the same model or equivalent).

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts.
   Especially critical parts in the power circuit block should not be replaced with other makers'.
   Critical parts are marked with ⚠ in the schematic diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safety operate without danger of electrical shock.

Vorsicht

Bei falscher Verwendung von Lithium-Batterien besteht Explisionsgefahr. Nur durch gleichen oder gleichwertigen Typ ersetzen, wie er von dem Gerätehersteller empfohlen wird. Die verbrauchten Batterien gemäß Anleitung des Herstellers vermüllen.

Sicherheitshinweise

Die folgenden Vorsichtsmaßnahmen sind einzuhalten, wenn Wartungsarbeiten an diesem Modell ausgeführt werden.

1. Da verschiedene Teile dieses Gerätes besondere Sicherheitsfunktionen aufweisen, nur Hitachi Original-Ersatzteile verwenden. Besonders kritische Teile im Netzteil dürfen nicht durch Teile anderer Hersteller ersetzt werden. Die kritischen Teile sind in den Schaltplänen mit dem Symbol ⚠ gekennzeichnet.
2. Bevor das reparierte Gerät an den Kunden ausgeliefert wird, muß der Wartungstechniker das Gerät einer gründlichen Prüfung unterziehen, um optimale Betriebsicherheit sicherzustellen und die Gefahr elektrischer Schläge auszuschließen.

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COMPARISON WITH PREVIOUS MODEL

← : Same as VM-E25E or VM-SP1E

ITEM	VM-E25E	VM-SP1E	VM-H37E
GENERAL			
POWER REQUIREMENTS	6V DC	←	←
POWER CONSUMPTION	7 W	6.5 W	7.5 W (FOCUS M)
DIMENSIONS (W X H X D mm)	105 X 107 X 199 (Horizontal)	129 X 129 X 227	80.5 X 104 X 238
WEIGHT	Approx. 770 gr	Approx. 1.1 kgr	Approx. 580 gr
OPERATION TEMPERATURE	0℃ to 40℃	←	←
OPERATION HUMIDITY	<80%	←	←
STORAGE TEMPERATURE	-20℃ to 50℃	←	←
VIDEO RECORDER SECTION			
FORMAT	8mm	←	Hi-8
RECORD/PLAYBACK SYSTEM	Two video record/ playback heads (+FE head)	←	Four video record/ playback heads (+FE head)
VIDEO SIGNAL	PAL colour & CCIR monochrome signals 625 lines	←	←
TAPE SPEED	SP: 20.05mm/sec. LP: 10.06mm/sec. (Playback only)	←	←
VIDEO INPUT	No	←	←
VIDEO OUTPUT	1.0Vp-p, 75 ohm	←	←
AUDIO INPUT	No	←	←
AUDIO OUTPUT	-8 dBs, less than 1K ohm	←	←
FAST FORWARD/REWIND TIME	Less than 10 minutes with P5-90 cassette	←	←
HEAD WHEEL	40 mm	←	26.7mm
BASIC CHASSIS TYPE	TL-R	←	SH
CAMERA SECTION			
SCANNING	625 lines/50 fields/ 25 frame	←	←
REQUIRED MINIMUM ILLUMINATION	6 lux	←	4 lux
CAMERA DEVICE	1/3” C.C.D	←	←
LENS DIAMETER		46 mm	34 mm
ZOOM RATIO/APERTURE	8:1 (6mm - 48mm)/f 2.0	←	8:1 (6mm - 48mm)/f 1.4
FEATURES			
WHITE BALANCE	AI Auto white balance	←	←
DIGITAL SIGNAL PROCESSOR	Yes	←	←
ELECTRICAL ZOOM	Yes (X64)	←	←
DIDITAL FILTER	No	←	Yes
AUTOFOCUS SYSTEM	VIDEO AF	←	←
PROGRAM AE (SHUTTER SPEED)	Yes (AE/50/100/250/1000/2000/10000)	Yes (Program AE only)	←
TITLER	Yes (2 page)	←	←
NEG./POSI	No	←	←
TIME LAPSE/ANIMATION/ SELF TIMER RECORDING	Yes (Self timer only)	←	No
S-CONNECTOR INPUT/OUTPUT	No	←	←
DC LIGHT CONNECTOR	No	←	Yes (Camera Light Shoe)
WIND (MIC) SWITCH	Yes	No	Yes
EXT. MICROPHONE JACK	No	←	←
EARPHONE (HEAD PHONE) JACK	No	←	←
WIRELESS REMOTE CONTROL	Yes	←	←

SERVICE MANUAL ABBREVIATION LIST

A	
ACC	Automatic Color Control
ACK	Automatic Color Killer
ADC B-Y	Analog to Digital Converted B-Y Signal
ADC R-Y	Analog to Digital Converted R-Y Signal
ADC Y	Analog to Digital Converted Luminance
ADD	Adder
ADRS	Address
A.DUB	Audio Dub
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
ALC	Automatic Level Control
AM	Amplitude modulation
AMP	Amplifier
APC	Automatic Phase Control
ASBL	Assemble (Phase Matching)
AUD.	Audio
AUX	Auxiliary
B	
BATT.	Battery
BG	Burst Gate or Back Ground
BGP	Burst Gate Pulse
BH	Power Supply for Selecting VHF High Band
BL	Power Supply for Selecting VHF Low Band
BM	Power Supply for Selecting VHF Mid Band
BPF	Band-pass Filter
BS	Power Supply for Selecting VHF Super Band
BU	Power Supply for Selecting UHF Band
BUF.	Buffer Amplifier
C	
C	Chroma
CAPST.	Capstan
CAS	Column Address Strobe
CARR.	Carrier
CATV	Cable TV
C.BLANK	Chroma Blanking
CCD	Charge Coupled Device
C.FG/CFG	Capstan Frequency Generater
CH	Channel
CHAR.	Character
C.MEMORY	Counter Memory
CNR	Chroma Noise Reducer
COM.	Common
COM.	Composite
COMPA	Comparator
COMPE	Compensator
COMP-EXP	Compressor-Expander
CONV.	Converter
CORR.	Correlation
COUNT.	Counter
C.PAUSE	Camera Pause
C/R	Capacitor/Resistor
C.RESET	Counter Reset
C.REVERSE	Count Reverse
CST	Cassette
C.SYNC	Composite Synchronizing Signal
CTL	Control Track Pulse
CYL	Cylinder
D	
DA	Double Azimuth
D/A	Digital to Analog
D-D	Direct Drive
DEEMPH.	Deemphasis
DEMOD.	Demodulator
DEMPX	Demultiplexer
DET	Detector
DISCRI.	Disciminator
DISP.	Display
DL	Delay Line
DN	Down
DO	Dropout
DOC	Dropout Compensator
DRAM	Dynamic Random Access Memory
D.REF 25	Delayed Reference 25Hz
D.SW 25	Delayed Switching 25Hz
DT/OE	Data Transfer/Output Enable
D/W	Dark/White
DWC	Delayed Write Clock
E	
EA-ROM	Electrically Alterable Read Only Memory
E-E	Electronic-to-Electronic
EMPH	Emphasis
EQ	Equalizer
EXT.	External
F	
F.ADV	Frame Advance
FB	Feed Back
FF	Flip Flop
F.FWD	Fast Forward
FG	Frequency Generator
FM	Frequency Modulation
FREQ.	Frequency
Fsc	Color Sub Carrier Frequency
FWD	Forward
G	
GEN	Generator
GND	Ground
H	
H	Horizontal
HD	Horizontal Drive
Hi-Fi	High Fidelity
HPF	High-pass Filter
HPL	High-pass Limiter
HSS	Horizontal Sync. Separator
I	
IF	Intermediate Frequency
INC	Row Counter Increment
INDI.	Indicator
INT.	Internal
INV.	Inverter
I/O	In/Out (Input/Output)
IR	Infrared Rays
IRT	Instant Recording Timer
L	
LCD	Liquide Crystal Display
LIN.	Linear
LM	Loading Motor
LNC	Line Noise Canceller
LOG	Logarithm
LP	Long Play
LPF	Low-pass Filter
L/R	Left/Right
M	
M.BRAKE	Main Brake
M.CUT	Monitor Cut
MEM.	Memory
MEM ON	Memory ON
MEM SW	Memory Switch
MEM VIDEO	Memorized Video
MIX	Mixer
MM	Monostable Multivibrator
MOD.	Modulator
MPX	Multiplex
MPX VIDEO	Multiplexed Video
M.STATE	Mechanism State
M.STOP	Memory Stop
MTS	Multi Channel Television Sound
N	
NF	Negative Feed Back
NORM. or NOR.	Normal
NR	Noise Reduction

O	
O/E	Odd/Even Field
OSC	Oscillator
OSD	On-Screen Display
P	
PB/PLAY	Playback
P.CONT	Power Control
PIF	Picture Intermediate Frequency
P IN P	Picture in Picture
PIX MOVE	Picture Move
PLL	Phase Locked Loop
POS.	Positive
PROG.	Program
PROTECT.	Protector
PWM	Pulse Width Modulation
R	
RAM	Randum Access Memory
RAS	Row Address Strobe
RC	Reading Clock
RCC	Reading Clock Clear
RCR	Row Counter Reset
REC	Record
RECT.	Rectifier
REF	Reference
REF 25	Reference 25Hz from servo circuit
REG	Regulator
REL	Refresh Control
REW	Rewind
REV	Reverse
RF	Radio Frequency
RM	Reel Motor
ROM	Read Only Memory
S	
SAP	Second Audio Program
SAW	Sawtooth
SC	Serial Control
SEP.	Separator
SG	Signal Generator
S/H	Sample and Hold
SIF	Sound Intermediate Frequency
SP	Standard Play
S.REEL	Supply Reel Sensor
SRCH	Search
SRV	Servo
S.TRACK	Slow Tracking
S-VHS	Super VHS
SW 30Hz	Head Switching Pulse
SYNC	Synchronizing signal
SYS.CON	System Control
T	
T.BRAKE	Take-up Brake
T/L	Tuner/Line
TP	Test Point
T.REEL	Take-up Reel Sensor
T.RESET	Timer Reset
TRS	Transfer
TμP	Timer Microprocessor
TU-μP	Tuning Microprocessor
U	
U/D	Up/Down
UNI.	Unified
V	
V	Vertical
VAR	Variable
VCA	Voltage Controlled Amplitier
VCO	Voltage Controlled Oscillator
V.DRV	Vertical Drive Pulse
V.DUB	Video Dub
VHS	Video Home Systems
VOL.	Volume
V-REF	Voltage Reference
VSS	Vertical Sync. Separator
Vss	Voltage Super Source
VT	Tuning Voltage
VT-U	Tuning Voltage-UHF
VT-V	Tuning Voltage-VHF
W	
WC	Write Clock
WCC	Write Clock Clear
WE	Weighting
Y	
Y/C	Luminance/Chrominance

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. Markings in Schematic and Circuit Board Diagrams

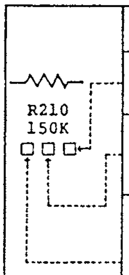
(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.

(2) Parts with marks Ⓩ in the circuit board diagrams are leadless jumpers.

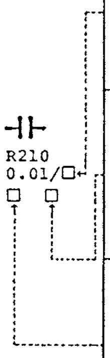
2. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables for reading abbreviations to replace parts correctly.

2-1. Resistors

	Value	No indication .... ohm K .... kohm
	Tolerance	No indication .... ±5% K .... ±10% M .... ±20%
	Power capacitance	No indication .... 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted)
	Type	No indication .. Carbon film fixed RC .... Carbon solid RW .... Power-type wire-wound solid RS .... Metal oxide film solid RN .... Metal film solid
Example R210 150K .... 150 kohm, carbon solid RC.1/2.K 1/2W, ±10%		

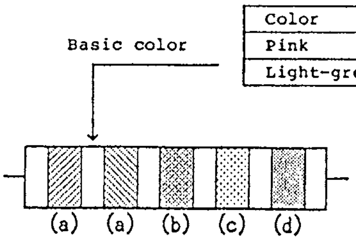
2-2. Capacitors

	Value	No indication .... μF P .... PF
	Dielectric resistance	No indication .... 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
	Tolerances	No indication .... ±10% J .... ±5% M .... ±20% C .... ±0.25PF Z .... +80%/-20% (No indication with electrolytic capacitors (excluding tantalum and high stability electrolytic capacitors)
	Type	No indication .. Ceramic, general electrolytic (see circuit symbol to distinct from ceramic) MYL .... Mylar (Polyester film) STY .... Styrol TA .... Tantalum KU .... High stability electrolytic MP .... Metalized paper
Example C210 0.01/25 .... Mylar, 0.01μF, 25WV MYL.J ±5%		

3. How to Read Capacitance of Resistance-Type Capacitors and Coils

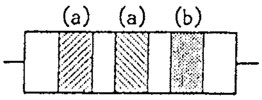
3-1 Capacitors

Color	Related voltage
Pink	25V
Light-green	50V



Color	Capacitance (a)	Multiplier (b)	Tolerance (c)	Characteristics (d)
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6	10^6		
Purple	7			
Gray	8		±30%	High permittivity type
White	9			For temperature compensation
Gold			±5%	
Silver			±10%	

3-2 Coils



4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.

(2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.

(3) The human body and clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so workers should be grounded.

(4) Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

5. Measure the voltages at each section with the negative side of power supply as a reference.

The voltages in the camera section are measured with the VTR in the record mode, and those in the VTR section are measured in the record and playback modes.

* Voltages in ( ) are in the record mode.

* One voltage value is common for recording and playback.

LEADLESS COMPONENT IDENTIFICATION

1. Leadless Transistors

The leadless transistor number is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three letters.

Letter	Transistor Number	Letter	Transistor Number
A	2SB709	H	2SA1036K
A(R)	2SB1218R(AR)	I	2SB792
A(S)	2SB766S(AS)	J	2SC2735
A(J)	2SB1000J(AJ)	K	2SA1036
B	2SC1621	K(P)	2SC2413P(KP)
B(J)	2SB1001J(BJ)	L	2SC2462
B(R)	2SC4081R(BR)	M	2SA1052
B(R)	2SC2412AR(BR)	N	2SC1653
B(S)	2SC2412KS(BS)	N(E)	2SD1306E(NE)
C	2SA1122	P	2SD814
C(L)	2SD999L(CL)	P(E)	2SA1171E(PE)
C(R)	2SB710R(CR)	Q	2SC2620
C(R)	2SC4097R(CR)	Q(O)	2SC2714O(QO)
C(R)	2SC2411R(CR)	R	2SC2618
C(Q)	2SC2411KQ(CQ)	S	2SA1121
D	2SC2463	S(Q)	2SC3082KQ(SQ)
D(L)	2SB798L(DL)	U	2SC2404
E	2SA1022	W	2SD602
F	2SC2619	Y	2SD601
F(S)	2SA1037KS(FS)	Y(R)	2SD1819R(YR)
F(R)	2SA1576R(FR)	Z	2SD874
-	- - -	-	- - -
AA(S)	2SD1757KS(AAS)	DB(R)	2SD1766R(DBR)
BC(R)	2SB1188R(BCR)	IR(D)	2SA1484D(IRD)
BF(R)	2SB1308R(BFR)		
-	- - -	-	- - -
1D(T)	2SD1328T(1DT)	1C(R)	2SB902R(1CR)
-	- - -	-	- - -
B(3)	2SC1621(3)(B3)	L(6)	MMBC1623(6)(L6)
C(7)	2SA811(7)(C7)	L(6)	2SC1623(6)(L6)
L(7)	2SC2812(7)(L7)	F(2)	2SC1009(2)(F2)
M(6)	2SA812(6)(M6)	M(6)	2SA1179(6)(M6)
N(4)	2SC1653(4)(N4)		
-	- - -	-	- - -
D(16)	2SC1622A(16)(D16)	R(25)	2SC3356(25)(R25)
R(35)	2SC3583(35)(R35)	R(45)	2SC3585(45)(R45)
Y(25)	NTM3906(25)(Y25)		
-	- - -	-	- - -
1(D)	2SC3127D(1D)		
-	- - -	-	- - -
S1	FMS1	S2	FMS2
T1	IMT1	W1	FMW1
W2	FMW2	W3	FMW3
X1	IMX1	Y1	FMY1
Y3	FMY3	Z1	IMZ1
Z2	IMZ2		
-	- - -	-	- - -
4R	XN1C301	5H	XN4501
5K	XN4401		
Digital Transistor			
04	DTC114TK	06	DTC144TK
13	DTA143EK	15	DTA124K
15(s)	DTA124EU	16	DTA144EK
16(s)	DTA144EU	23	DTC143EK
24	DTC114EK	24(s)	DTC114EU
25	DTC124K	25(s)	DTC124EU
26	DTC144K	26(s)	DTC144EU
33	DTA143XK	43	DTC143XK
52	DTA123YK	64	DTC114YK
-	- - -	-	- - -
6B	UN5112	8B	UN5212
-	- - -	-	- - -
F52	DTB123	G21	DTD113ZK
H03	DTC343TK	H27	DTC363EK
R31	FP1L2Q		
-	- - -	-	- - -
A1	FMA1	A2	FMA2
B2	IMB2	C2	FMC2
D2	IMD2	G1	FMG1
G2	FMG2	G5	FMG5
H2	IMH2		
FET			
G	2SK302	J	2SK208
K	2SK160	W	2SK322
X	2SK157	X(4)	2SK94(4)(X4)
X(17)	2SK425(17)(X17)		
Y	2SK197	Z	2SK217
-	- - -	-	- - -
XA	2SK980		
-	- - -	-	- - -
3	2SK620	3(O)	2SK621(O)(3O)
-	- - -	-	- - -
1M	2SA1052	1F	2SK321
1K	2SK316	2B	2SK374

* "(s)" in the above table shows a component with smaller size.

* Codes on the digital transistors show only the transistor numbers.

(1) Identification for two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D

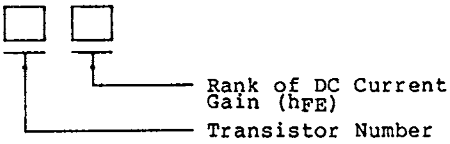


Fig.5-1 Leadless Transistor Code

(2) Identification for two types of one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Transistor Number
L	2SC1623

Example:

Code	Number
L5	2SC1623(5)
L6	2SC1623(6)

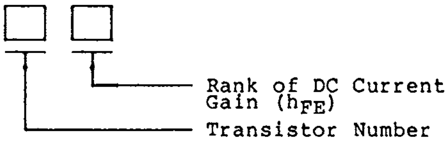
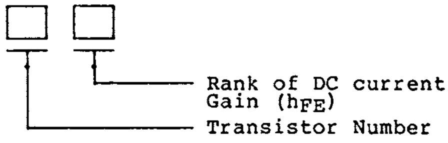


Fig.5-2 Leadless Transistor Code

Example:

Code	Number
1D	2SC3127D



Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 show only the transistor numbers.

Fig.5-3 Leadless Transistor Code

(3) Identification for one numeral and two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
1FQ	2SK321Q

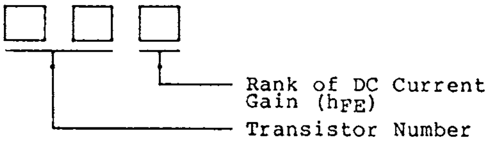


Fig.5-4 Leadless Transistor Code

(4) Identification for one letter and two numerals.
Use this coce and the following chart for component identification.

Example:

Code	Number
R25	2SC3356

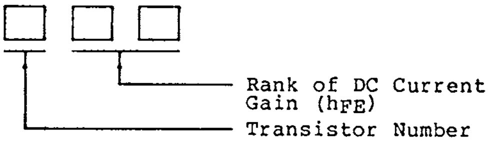


Fig. 5-5 Leadless Transistor Code

(5) Identification for two letters and one numeral.
Use this code and the following chart for component identification.

Example:

Code	Number
DV5	2SD596

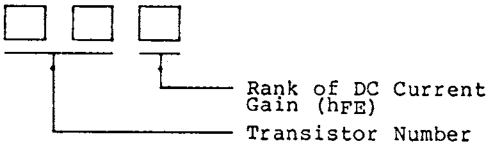


Fig. 5-6 Leadless Transistor Code

(6) Identification for three letters.
Use this code and the following chart for component identification.

Example:

Code	Number
AAS	2SD1757KS

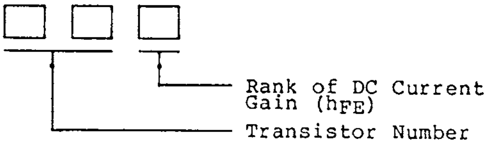


Fig. 5-7 Leadless Transistor Code

2. Leadless Diodes

Leadless diode numbers are indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three numerals.
Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
BE	1SV172		
MC	MA153	MC(s)	MA143
MH	MA151K	MH(s)	MA141K
MN	MA151WA	MN(s)	MA141WA
MO	MA152WA		
MT	MA151WK	MT(s)	MA141WK
MU	MA152WK		
M1D	MA160	M1P	MA714
M2A	MA122	S1A	1SR143
N	DAN202K	Z	DA106K
A3	1S2835	A5	1S2837
C1	HSM88S	C2	HSM276S
1A	MA110		
3.0L	MA3030L	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
20	HZM6-B	27	RD2.7M-B
30	RD3.0M-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3.0M-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1M-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

* "(s)" in the above table shows a component with smaller size.

3. Leadless Resistors

The resistor value is indicated on the surface of the component, using a three-digit numbers, or one letter and one numeral.

(1) Identification for three digit numbers.
Read this code following the same procedure as when reading the color code on discrete resistors.

Example:

Code	Value
330	$33 \times 10^0 = 33$ ohms
561	$56 \times 10^1 = 560$ ohms
123	$12 \times 10^3 = 12$K ohms
1R2	$1 + 0.2 = 1.2$ ohms

(R: Decimal point)

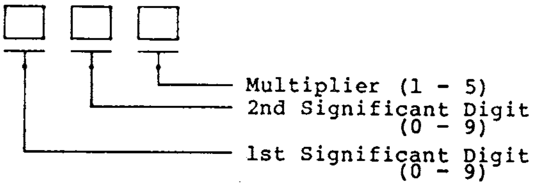


Fig. 5-8 Leadless Resistor Code

(2) Identification for one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

Code	Value
A1	$1 \times 10^1 = 10$ ohms
G2	$1.8 \times 10^2 = 180$ ohms
L3	$2.7 \times 10^3 = 2700$ ohms
S4	$4.7 \times 10^4 =$ 47K ohms
W5	$6.8 \times 10^5 =$ 680K ohms

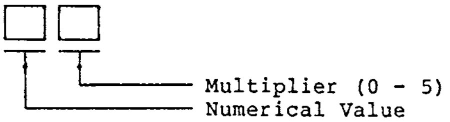
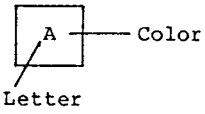


Fig. 5-9 Leadless Resistor Code

4. Leadless Capacitors

The capacitance value is indicated on the surface of the component, using body color and one letter, or one letter and one numeral.

(1) Identification for body color and one letter.

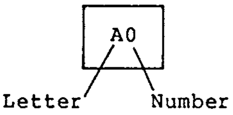


Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
Black	A	10(PF)		U	560
	C	12		W	680
	E	15		Y	820
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68			
	Y	82	Green	A	0.01(μF)
				E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

(2) Identification for one letter and one numeral.



Letter /Number	Value	Letter /Number	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
		U2	560
A1	10(PF)	W2	680
C1	12	Y2	820
E1	15		
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56		
W1	68	A4	0.01(μF)
Y1	82	E4	0.015
		J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

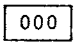
Example:

Letter /Number	Value
A0	1PF
A1	10PF

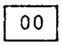
5. Leadless Jumper

The leadless jumper is indicated as shown below.

(1)

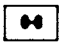


(2)



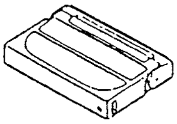
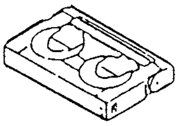
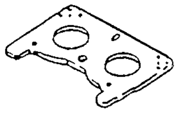
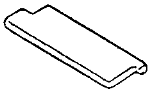
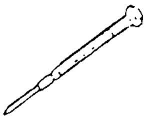
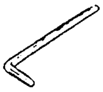
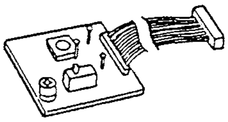
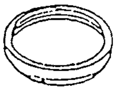
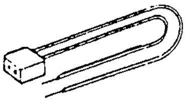
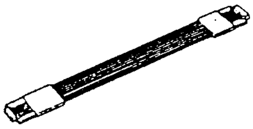
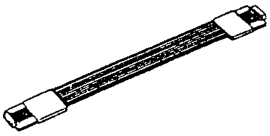
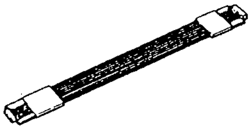
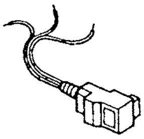
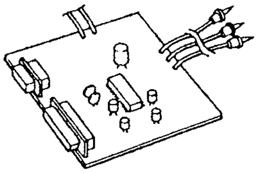
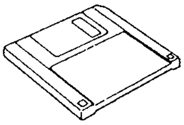
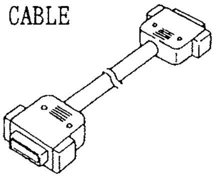
(3)

(4)



JIG AND TAPES FOR ADJUSTMENT

Note: Mark "※" is new jigs and tools.

1. ALIGNMENT TAPE COLOUR BAR/400Hz (20HSC-3) No.7099232 	2. CASSETTE TORQUE METER SRK-8T-232 No.7099236 SRK-8T-212 No.7099402 	3. MASTER PLANE No.7099237 	4. REEL DISK HEIGHT JIG No.7099238 
5. SPECIAL DRIVER No.7099239 	6. 0.7mm HEXAGONAL WRENCH No.7099316 	7. ATF-R JIG No.7099461 	8. C12 LIGHT BALANCING FILTER No.7099369 
9. 2-PIN EXTENSION CABLE No.7099283 	10. 24-PIN EXTENSION CABLE No.7099424 	11. 32-PIN EXTENSION CABLE No.7099426 	※12. 30-PIN EXTENSION CABLE No.7099484 
13. DSP AV OUTPUT JIG No.7099456 	14. DSP JIG No. 7099442 	15. CAMERA ADJ. FLOPPY 	16. PERSONAL COMPUTER DISK
17. PERSONAL COMPUTER 9-PIN or 25-PIN CABLE 			

HOW TO USE THE EXTENSION CABLE

No.	NAME OF EXTENSION CABLE	PARTS No.	HOW TO USE (PURPOSE OF USE)
9	2-PIN EXTENSION CABLE	7099283	• For power supply. (Red: Positive, Brown: Negative) • Power supply cable after the case after the case removed.
10	24-PIN EXTENSION CABLE	7099424	• Installed between the process and autofocus circuit boards.
11	32-PIN EXTENSION CABLE	7099426	• Installed between the process and main circuit boards.
12	30-PIN EXTENSION CABLE	7099426	• Installed between the process and sensor circuit boards.

SERVICING POSITION
(When observing waveform and voltages)

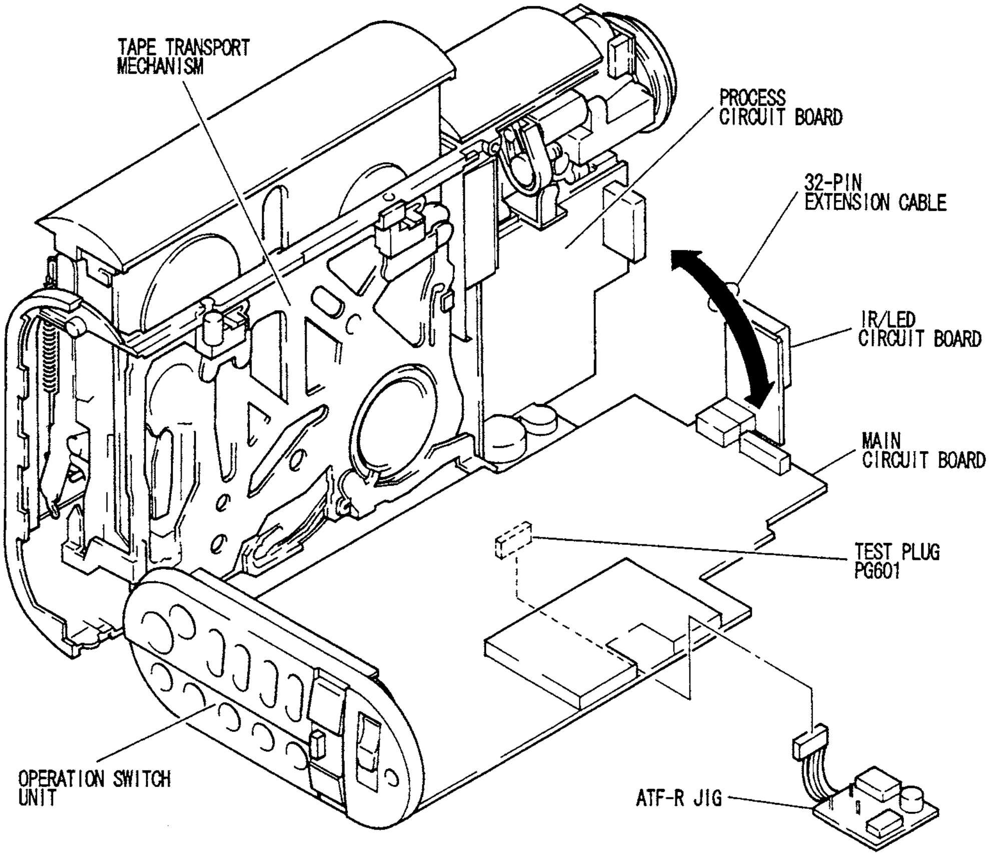

TAPE TRANSPORT MECHANISM
PROCESS CIRCUIT BOARD
32-PIN EXTENSION CABLE
IR/LED CIRCUIT BOARD
MAIN CIRCUIT BOARD
TEST PLUG PG601
OPERATION SWITCH UNIT
ATF-R JIG

Fig. 1-1

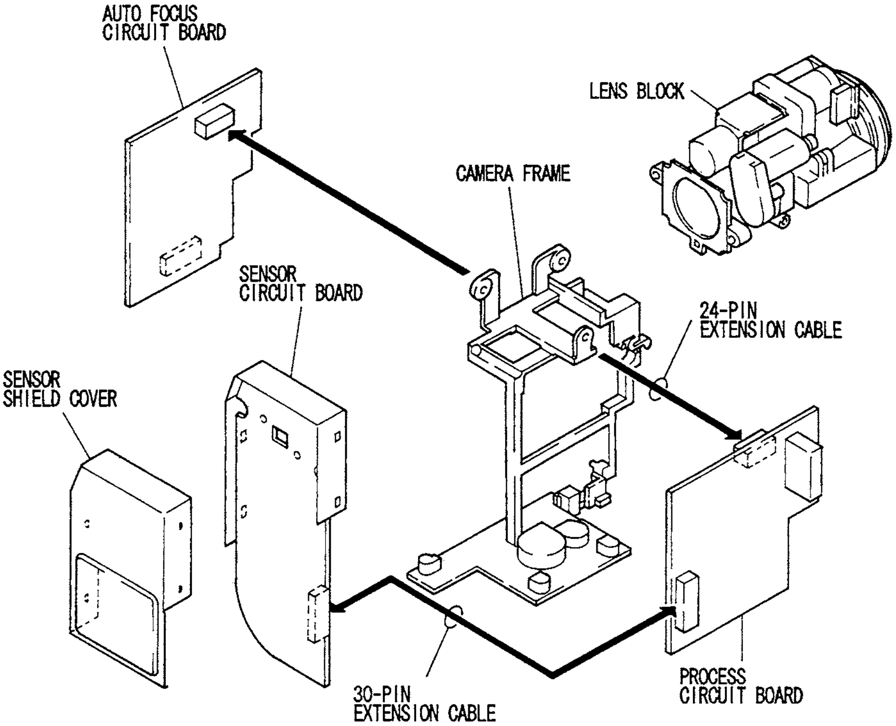

AUTO FOCUS CIRCUIT BOARD
LENS BLOCK
CAMERA FRAME
SENSOR CIRCUIT BOARD
24-PIN EXTENSION CABLE
SENSOR SHIELD COVER
30-PIN EXTENSION CABLE
PROCESS CIRCUIT BOARD

Fig. 1-2

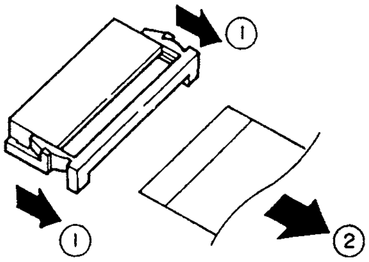
DISASSEMBLY

Caution 1: When dismantling the lens block, never remove components other than the zoom motor, iris block, focus motor and flat cable of the lens.

Caution 2: Set the camera/recorder to the eject state before dismantling it. If the camera/recorder will not enter the eject state due to a defect, refer to "2. DISASSEMBLY METHOD WHEN TROUBLE OCCURS".

Caution 3: Disconnect flat cables from connectors by the procedure shown in Fig. A. Since many circuit boards in the camera /recorder are connected by in-board connectors, be sure to follow DISASSEMBLY when removing the circuit boards.

HOW TO DISCONNECT A FLAT CABLE



① Release the lock of the connector on the left and right simultaneously.

② Pull out the flat cable.

Fig. A

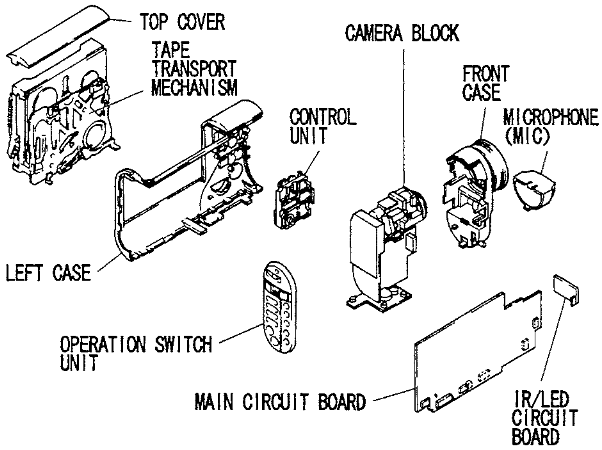

TOP COVER
TAPE TRANSPORT MECHANISM
CAMERA BLOCK
FRONT CASE
MICROPHONE (MIC)
CONTROL UNIT
LEFT CASE
OPERATION SWITCH UNIT
MAIN CIRCUIT BOARD
IR/LED CIRCUIT BOARD

Fig. 1-2

1. IDENTIFICATIONS OF MAJOR COMPONENTS

Numbers in ( ) show the numbers of items that describe how to remove the components, and letters in 〈 〉 are the abbreviations of components used in this manual.

1-1. Major Components and Circuit Boards

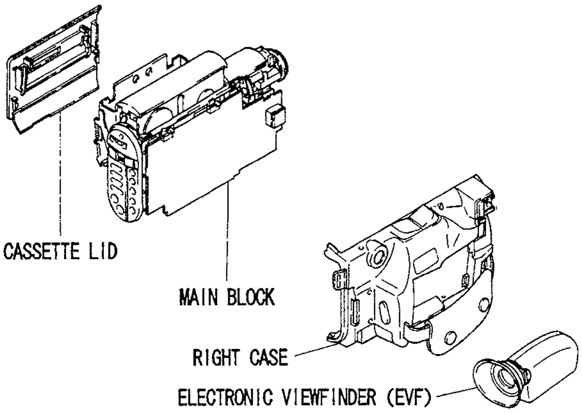

CASSETTE LID
MAIN BLOCK
RIGHT CASE
ELECTRONIC VIEWFINDER (EVF)

Fig. 1-1

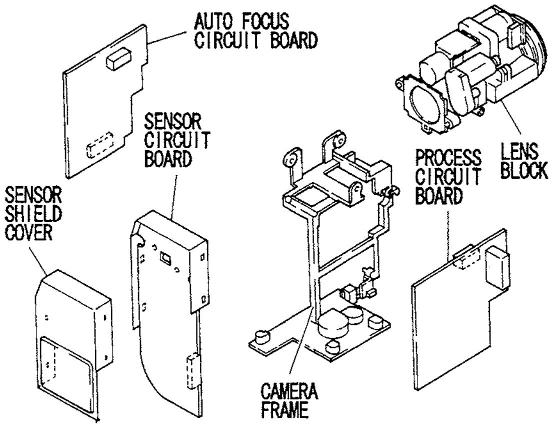

AUTO FOCUS CIRCUIT BOARD
SENSOR CIRCUIT BOARD
SENSOR SHIELD COVER
PROCESS CIRCUIT BOARD
LENS BLOCK
CAMERA FRAME

Fig. 1-3

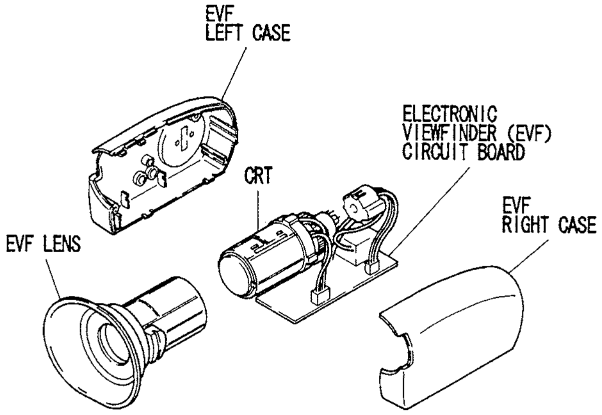

EVF
LEFT CASE
ELECTRONIC
VIEWFINDER (EVF)
CIRCUIT BOARD
CRT
EVF
RIGHT CASE
EVF LENS

Fig. 1-4

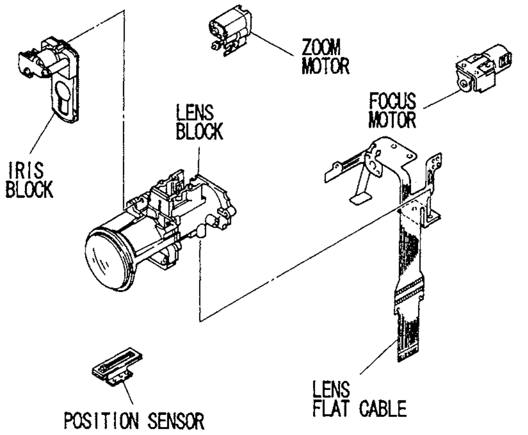

ZOOM
MOTOR
FOCUS
MOTOR
LENS
BLOCK
IRIS
BLOCK
POSITION SENSOR
LENS
FLAT CABLE

Fig. 1-5

1-2. Major Mechanical Components

1-2-1. Subchassis assembly <SCA> - Top view -

1. Loading motor <LM>	(4-2-1)
2. Supply guide roller <SGR>	(4-2-1)
3. Supply guide roller rail	(4-2-4)
4. Trouble sensors <TRS>	(4-2-4)
5. Pull-out arm <POA>	(4-2-4)
6. Pressure roller <PR>	(4-2-4)
7. Take-up reel disk <TRD>	(4-1-2)
8. Pressure roller drive arm <PDA>	(4-2-4)
9. Take-up brake <TB>	(4-2-3)
10. Subchassis plate <SCP>	(4-1-2)
11. Idler gear <IG>	(4-1-2)
12. Supply reel disk <SRD>	(4-2-3)
13. Supply subbrake <SSB>	(4-2-3)
14. Supply main brake <SMB>	(4-2-3)
15. Tension band <TBA>	(4-2-3)
16. Tension spring	(4-2-3)
17. Tension arm <T-ARM>	(4-2-3)

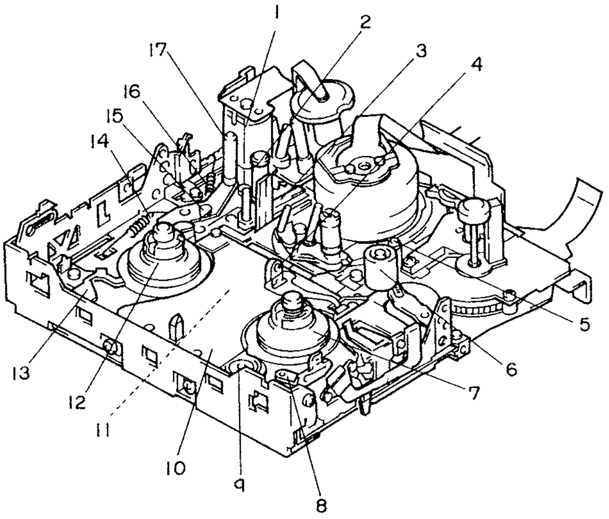

1
2
3
4
17
16
15
14
5
6
7
13
12
11
10
9
8

Fig. 1-6

1-2-2. Subchassis assembly <SCA> - Bottom view -

1. Loading gear plate	(4-2-5)
2. Loading gear (1) <LG1>	(4-2-5)
3. Loading gear (2) <LG2>	(4-2-5)
4. Loading gear (3) <LG3>	(4-2-5)
5. Mechanism state switch <MSW>	(4-2-5)
6. Cam arm <CA>	(4-2-5)
7. Cam gear <CG>	(4-2-5)
8. Pressure roller cam gear <PCG>	(4-2-5)
9. Take-up slider <TUS>	(4-2-5)

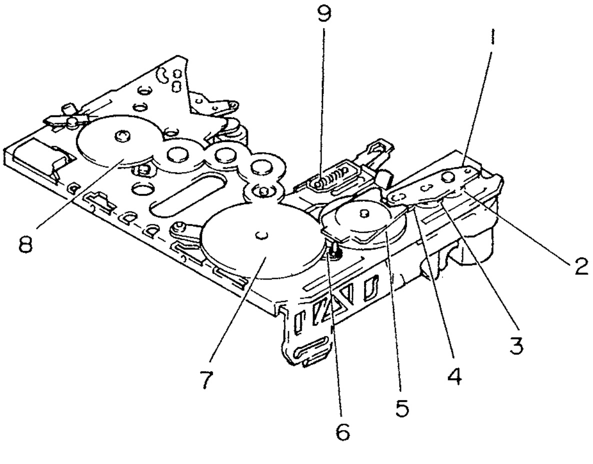


Fig. 1-7

1-2-3. Main chassis assembly

1. Cylinder assembly <CYL>	(4-3-2)
2. Guide roller rail <GRR>	(4-3-3)
3. Capstan motor <CPM>	(4-3-3)
4. Pulley gear <PG>	(4-3-3)
5. Take-up guide roller <TGR>	(4-3-3)
6. Capstan belt <CB>	(4-3-4)
7. Centre gear <CG>	(4-3-4)
8. Take-up slant pole <TSP>	(4-3-4)
9. Guide roller base plate <GBP>	(4-3-4)
10. Impedance roller base <IRB>	(4-3-5)
11. Impedance roller plate <IRP>	(4-3-3)
12. Impedance roller <IMP>	(4-3-3)

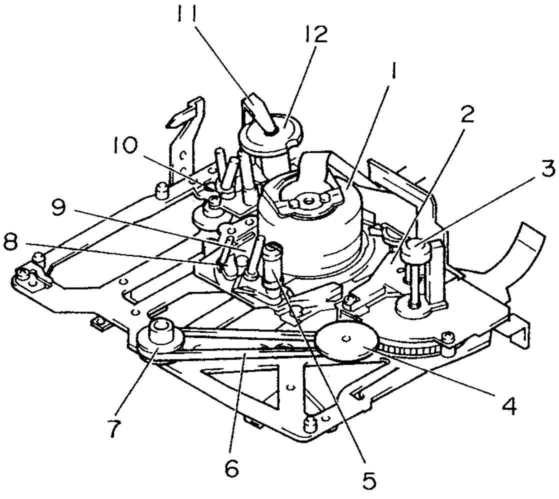


Fig. 1-8

2. DISASSEMBLY METHOD WHEN TROUBLE OCCURS

The following shows the disassembly method that should be taken when the camera/recorder does not operate normally. When it operates normally, refer to "3. NORMAL DISASSEMBLY METHOD".

2-1. How to Make Unloading (Figs. 2-1, 2-2)

Perform the following procedure to dismantle the camera/recorder if unloading is not performed normally (the camera/recorder cannot be set to the eject state).

1) Remove eleven (11) screws. (See Fig. 2-1)
2) Remove the right case in the direction of the arrow.
3) Disconnect two (2) connectors.

Advice 1:
If the defect is in the electric circuit system, apply 3V DC to pattern (A) of the main circuit board to unload the camera/recorder.
If the defect is in the tape transport mechanism, perform the following steps.

4) Disconnect one (1) connector from the back of the main circuit board.
5) Remove one (1) screw.
6) Remove the front case in the direction of the arrow.
7) Remove the IR/LED circuit board in the direction of the arrow.
8) Remove the operation switch unit in the direction of the arrow.

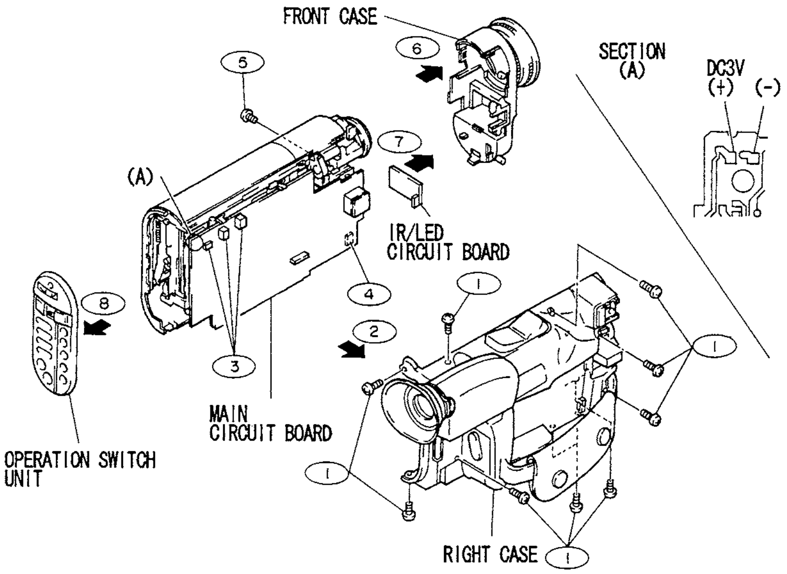


Fig. 2-1

9) Release two (2) tabs. (See Fig. 2-2)
10) Disconnect three (3) falt cables.
11) Remove one (1) screw.
12) Release two (2) tabs.
13) Open the main circuit board in the direction of the arrrow. (The main and process circuit boards are connected via an board-in type connector.)
14) Disconnect two (2) flat cables and one (1) connector.
15) Remove four (4) screws.
16) Remove the camera block in the direction of the arrow.
17) Disconnect one (1) flat cable on the autofocus circuit board.
18) Remove three (3) screws.

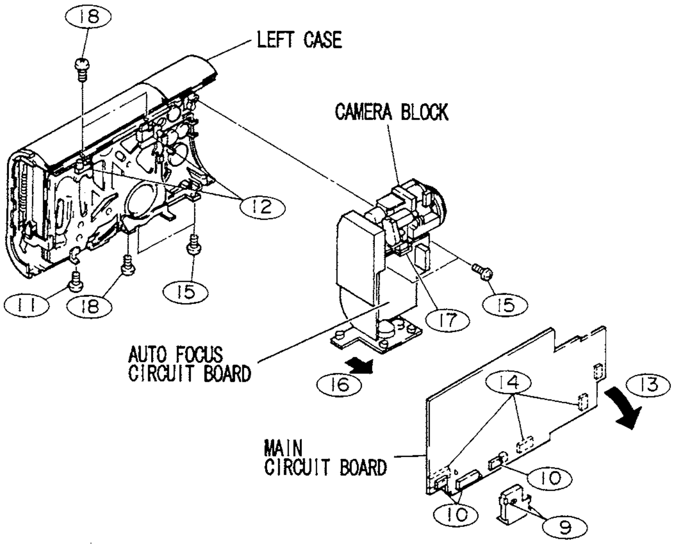

18
LEFT CASE
CAMERA BLOCK
12
11
18
15
15
17
AUTO FOCUS
CIRCUIT BOARD
16
14
13
MAIN
CIRCUIT BOARD
10
10
9

Fig. 2-2

19) Remove two (2) screws. (Fig. 2-3)
20) Release two (2) tabs of the cassette lid.

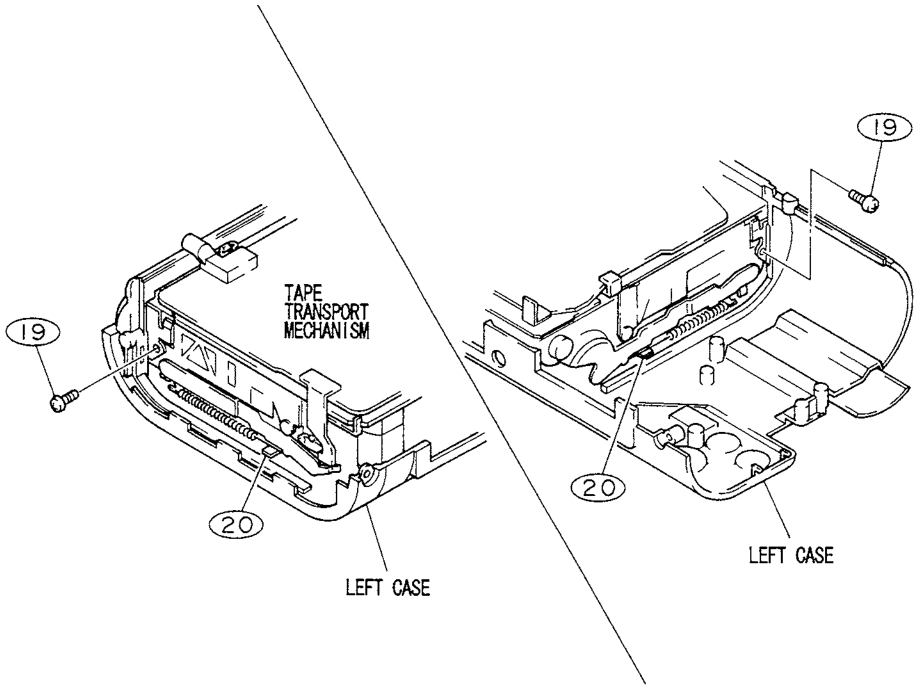

19
TAPE
TRANSPORT
MECHANISM
19
20
20
LEFT CASE
LEFT CASE

Fig. 2-3

21) Lift the top cover in the direction of arrow (B) and hold it, then remove the cassette lid in the direction of arrow (C). (See Fig. 2-4)

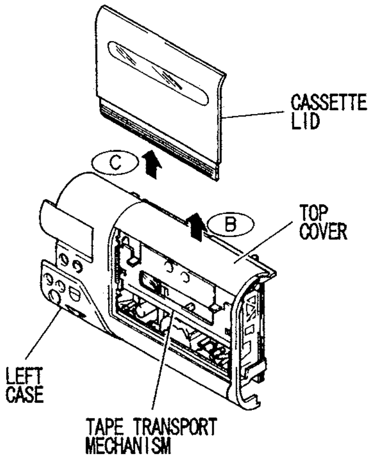

CASSETTE LID
C
B
TOP COVER
LEFT CASE
TAPE TRANSPORT MECHANISM

Fig. 2-4

22) Release two (2) tabs of the top cover. (See Fig. 2-5)

23) Remove the top cover in the direction of the arrow.

Advice 2:
The above procedure disassembles the tape transport mechanism. Referring to "3. NORMAL DISASSEMBLY METHOD", remove components as required hereafter.

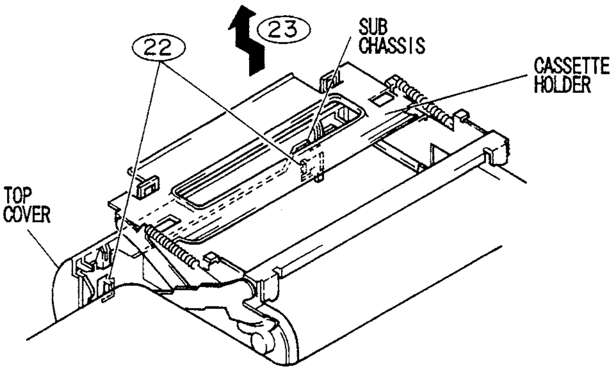

22
23
SUB CHASSIS
CASSETTE HOLDER
TOP COVER

Fig. 2-5

Advice 3:
If the defect is in the loading motor, remove the loading motor, then turn the cam gear <CG> manually in the direction of the arrow to unload the camera/recorder. (See Fig. 2-6)

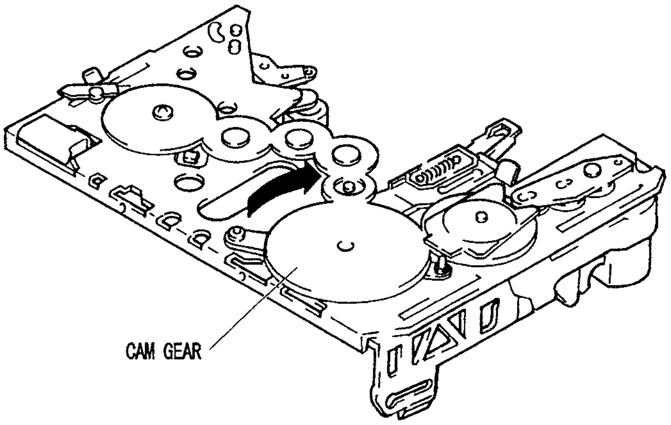


Fig. 2-6

3. NORMAL DISASSEMBLY METHOD

Perform the following to dismantle the camera/recorder if unloading is performed normally (the camera/recorder can be set to the eject state). If unloading cannot be done, refer to "2. DISASSEMBLY METHOD WHEN TROUBLE OCCURS".

3-1. Case and Circuit Board Removal

3-1-1. Cassette lid <CSL>, Opening Right Case <RC>, accessary shoe <ACS> , Electronic Viewfinder (EVF) and Right Case <RC> (Figs. 3-1-1, 3-1-2)

(1) Cassette lid <CSL> (Fig. 3-1-1)

Caution 1: Be sure to perform the following to remove the cassette lid. If it is removed in a different way, the cassette holder may be damaged.

Caution 2: When reinstalling, perform the reverse procedure to removal described below.

1) Move the CSL in the direction of arrow (A) to release tab (B) from rib (C) of the CSL. (When reinstalling, hold tab (B), then insert it into rib (C) of the CSL.)
2) Move the CSL in the direction of arrow (D) to release tab (E) of the cassette holder from rib (F) of the CSL.
3) Move the CSL in the direction of arrow (G) to release two (2) tabs (H) of the CSL from section (J) of the cassette holder.

(2) Opening the right case <RC> (Fig. 3-1-2)

1) Remove the backup battery holder.
2) Open the AV jack cover.
3) Remove eleven (11) screws.
4) Open the right case in the direction of the arrow.
5) Disconnect three (3) connectors.

(3) Accessary Shoe <ACS> (Fig. 3-1-2)

Caution: Open the RC in advance before removing the ACS.

1) Remove two (2) screws.

(4) Electronic viewfinder (EVF) and right case <RC> (Fig. 3-1-2)

Caution: Open the RC in advance before removing the EVF.

1) Remove two (2) screws.

Caution: The EVF plate and plate spring are removed on their own when the EVF is removed.

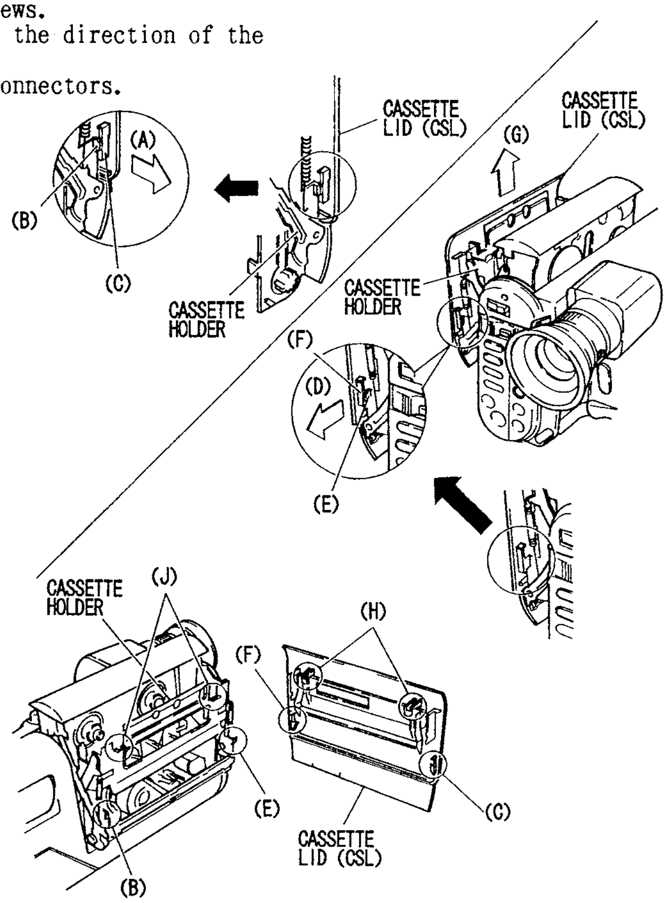


Fig. 3-1-1

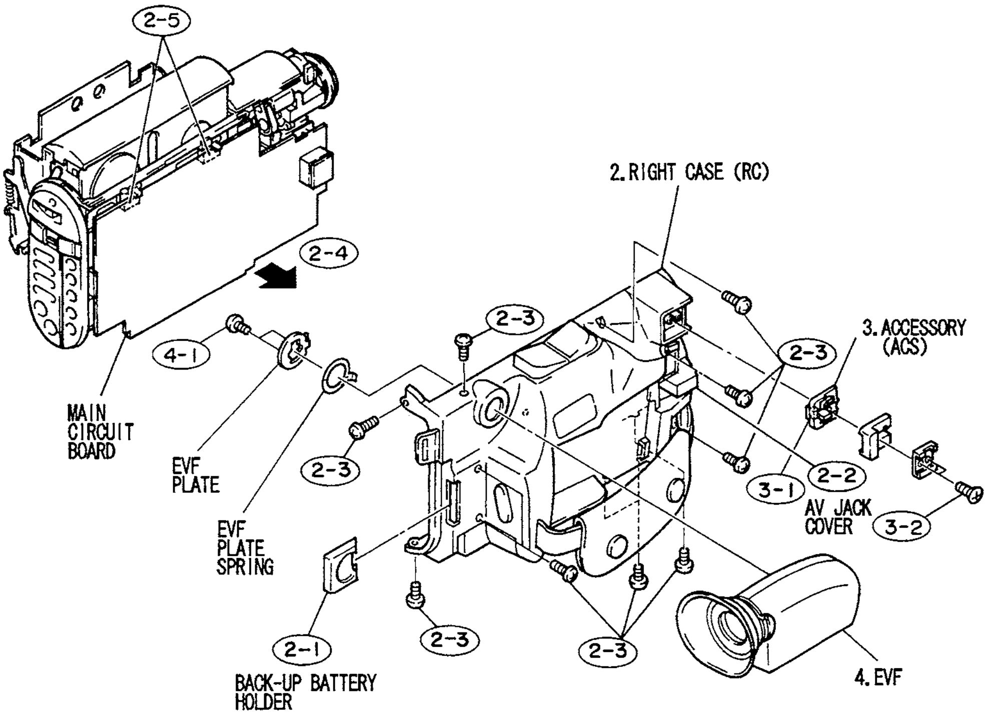

2-5
2.RIGHT CASE (RC)
2-4
2-3
3.ACCESSORY (ACS)
4-1
2-3
MAIN CIRCUIT BOARD
EVF PLATE
2-3
3-1
2-2
AV JACK COVER
3-2
EVF PLATE SPRING
2-1
2-3
2-3
4.EVF
BACK-UP BATTERY HOLDER

Fig. 3-1-2

3-1-2. Top cover <TPC> (Fig. 3-2)

Components to remove in advance	Item
• Cassette lid <CSL>	3-1-1

1) Release two (2) tabs.
2) Remove the TPC in the direction of the arrow.

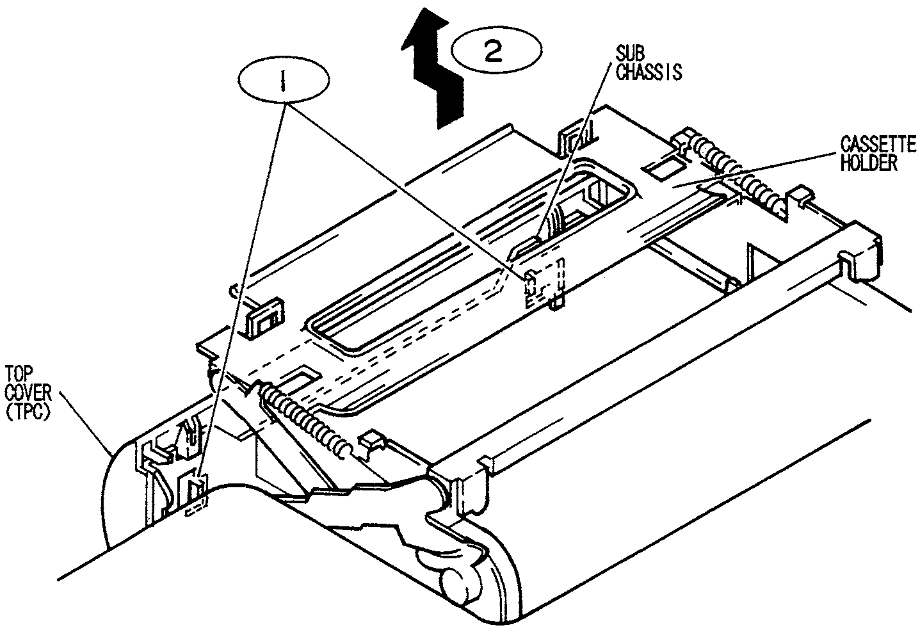

2
1
SUB CHASSIS
CASSETTE HOLDER
TOP COVER (TPC)

Fig. 3-2

3-1-3. Operation switch unit <OSW>, front case <FC>, microphone <MIC>, IR/LED circuit board <IR/LED CBA>, main circuit board <MAN CBA>, tape transport mechanism <TTM>, camera block <CAM>, control unit <CON> and left case <LC> (Fig. 3-3)

Components to remove in advance	Item
• Cassette lid <CSL>, opening right case	3-1-1
• Top cover <TPC>	3-1-2

Caution: Remove the CSL and TPC only when removing the TTM.

(1) Operation switch unit <OSW>

1) Remove the OSW in the direction of the arrow. (The OSW and MAN CBA are connected via an in-board connector.)

(2) Front case <FC> and microphone <MIC>

1) Remove one (1) screw.
2) Remove the RC in the direction of the arrow.
3) Disconnect one (1) connector.
4) Release one (1) tab.
5) Remove the MIC in the direction of the arrow.

(3) IR/LED circuit board <IR/LED CBA>

Caution: Remove the FC from the LC in advance before removing the IR/LED CBA.

1) Remove the IR/LED CBA in the direction of the arrow. (The IR/LED CBA and MAN CBA are connected via an in-board connector.)

(4) Main circuit board <MAN CBA>

Caution: Remove the OSW, FC and IR/LED CBA in advance before removing the MAN CBA.

1) Release two (2) tabs.
2) Disconnect three (3) flat cables.
3) Remove one (1) screw.
4) Release two (2) tabs.
5) Open the MAN CBA in the direction of the arrow. (MAN CBA and the process circuit board is connected via an in-board connector.)
6) Disconnect two (2) flat cables and one (1) connector.

(5) Tape transport mechanism <TTM>

Caution: Remove the OSW, FC, IR/LED CBA and MAN CBA in advance before removing the TTM.

1) Remove one (1) screw.
2) Remove the TTM in the direction of the arrow.

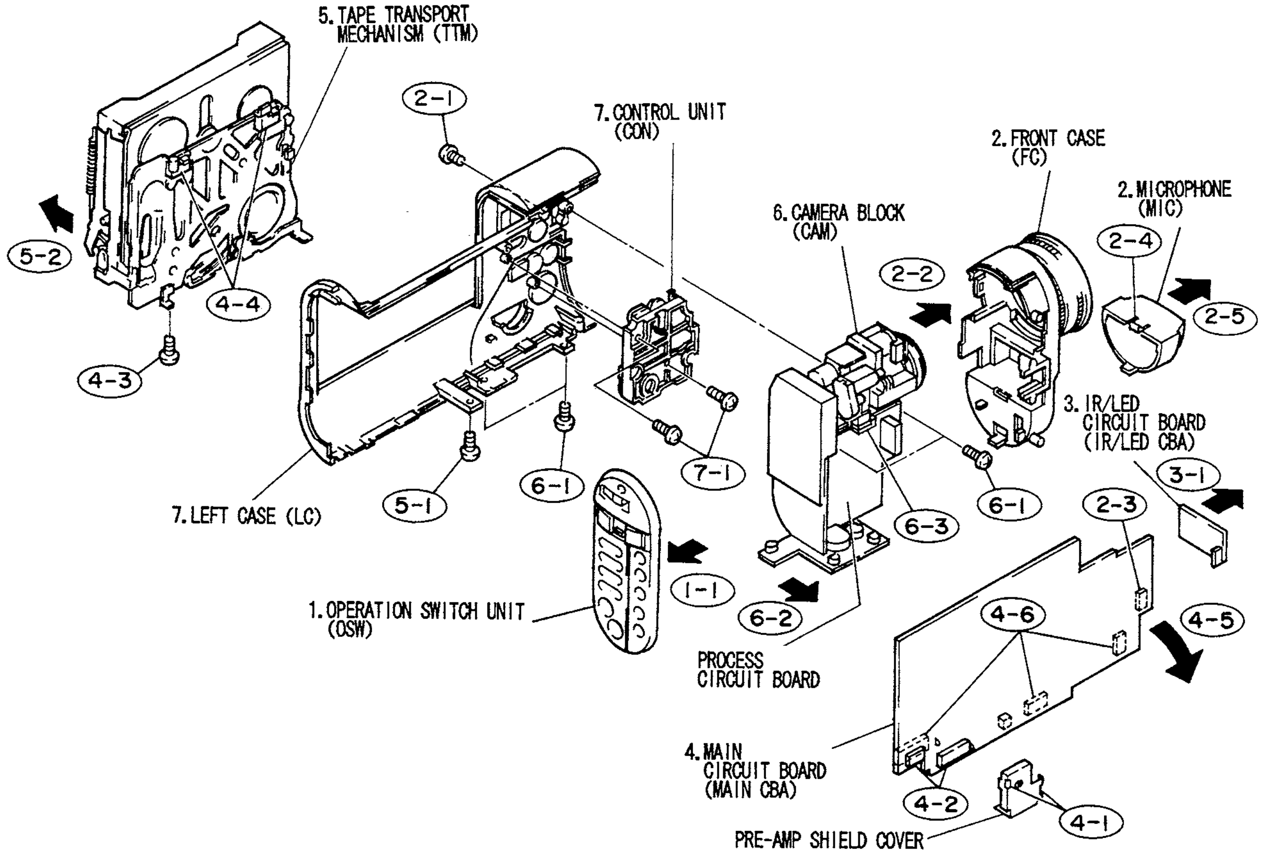
(6) Camera block <CAM>

1) Remove four (4) screws.
2) Remove the CAM in the direction of the arrow.
3) Disconnect one (1) flat cable on the autofocus circuit board.

(7) Control unit <CON> and left case <LC>

Caution: Remove the OSW, FC, IR/LED CBA and MAN CBA in advance before removing the CON and LC.

1) Remove two (2) screws.



5. TAPE TRANSPORT MECHANISM (TTM)
2-1
7. CONTROL UNIT (CON)
2. FRONT CASE (FC)
2. MICROPHONE (MIC)
6. CAMERA BLOCK (CAM)
2-4
2-2
2-5
5-2
4-4
4-3
3. IR/LED CIRCUIT BOARD (IR/LED CBA)
3-1
7-1
6-1
6-1
6-3
2-3
7. LEFT CASE (LC)
5-1
1-1
6-2
4-6
4-5
1. OPERATION SWITCH UNIT (OSW)
PROCESS CIRCUIT BOARD
4. MAIN CIRCUIT BOARD (MAIN CBA)
4-2
4-1
PRE-AMP SHIELD COVER

Fig. 3-3

3-1-4. Autofocus circuit board <AF CBA>, process circuit board <PC CBA>, sensor circuit board <SP CBA>, camera frame <CF> and lens block <LENS> (Fig. 3-4)

Components to remove in advance	Item
• Opening right case	3-1-1
• Operation switch unit <OSW>, front case <FC>, IR/LED circuit board <LR/LED CBA>, main circuit board <MAN CBA>, camera block<CAM>	3-1-3

(1) Autofocus circuit board <AF CBA> and process circuit board <PC CBA>

1) Disconnect one (1) flat cable.
2) Release one (1) tab.
3) Remove the AF CBA in the direction of the arrow. (The AF CBA and PC CBA are connected via an in-board connector.)
4) Remove the PC CBA in the direction of the arrow. (The SP CBA and PC CBA are connected via an in-board connector.)

(2) Sensor circuit board <SP CBA>

Caution: Remove the AF CBA and PC CBA in advance before removing the SP CBA.

1) Release four (4) tabs and remove the sensor shield cover.
2) Remove two (2) screws.
3) Remove two (2) screws.

Caution 1: When the sensor cover is removed, the crystal filter and sensor rubber are removed on their own. Be careful not damage the crystal filter.

Caution 2: The crystal filter has a specified orientation. Be sure to install it as shown in Fig. 3-4.

4) Unsolder sixteen (16) points on the SP circuit board (IC1001).
5) Remove two (2) screws.

(3) Camera frame <CF> and lens block <LENS>

Caution 1: Remove the AF CBA and PC CBA in advance before removing the CF.

Caution 2: Remove the AF CBA, PC CBA and SP CBA in advance before removing the LENS.

1) Remove three (3) screws.
2) Widen a section of the CF that is engaged with the LENS slightly and remove the LENS from the CF.

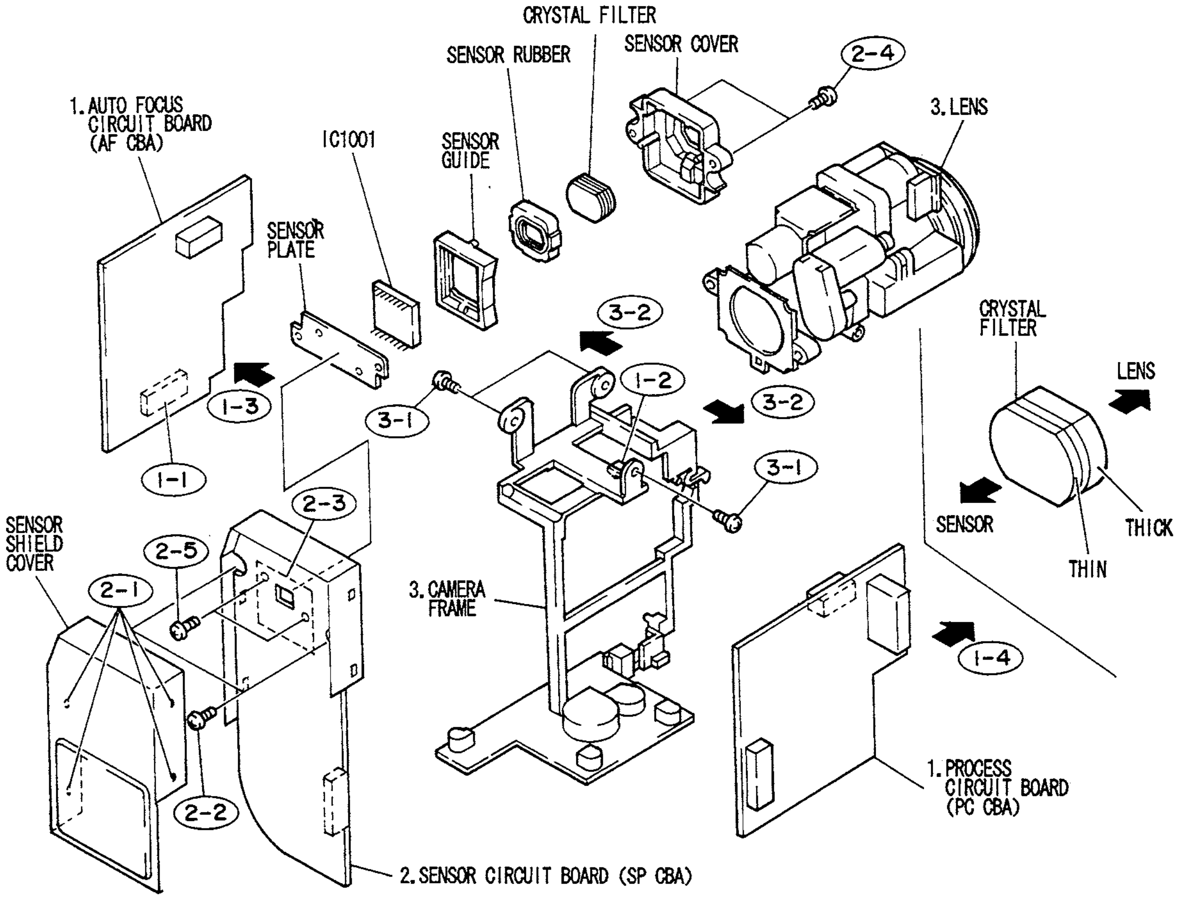

CRYSTAL FILTER
SENSOR RUBBER
SENSOR COVER
2-4
1.AUTO FOCUS CIRCUIT BOARD (AF CBA)
IC1001
SENSOR GUIDE
3.LENS
SENSOR PLATE
3-2
1-2
3-2
1-3
3-1
CRYSTAL FILTER
LENS
1-1
3-1
2-3
SENSOR SHIELD COVER
2-5
2-1
3.CAMERA FRAME
SENSOR
THICK
THIN
1-4
2-2
1.PROCESS CIRCUIT BOARD (PC CBA)
2.SENSOR CIRCUIT BOARD (SP CBA)

Fig. 3-4

3-2. Electronic Viewfinder (EVF) Block Removal

3-2-1. EVF lens <EL>, EVF left case <EVF-L>, EVF right case <EVF-R>, EVF circuit board <EVF CBA>, CRT (Fig. 3-5)

Components to remove in advance	Item
• Opening right case <RC>, EVF	3-1-1

(1) EVF lens <EL>

1) Turn the EL in the direction of arrow (A).
1) Remove the EL in the direction of arrow (B).

(2) EVF left case <EVF-L>

1) Remove two (2) screws.

(3) EVF right case <EVF-R>, EVF circuit board <EVF CBA>, CRT

Caution: Remove the EL in advance.
1) Remove the CRT and EVF CBA from the EVF-R.
2) Disconnect connector and CRT socket.

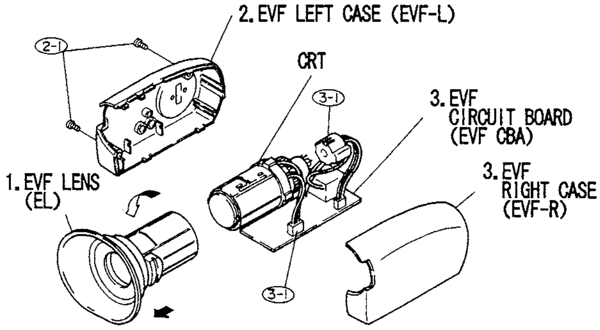

2. EVF LEFT CASE (EVF-L)
2-1
CRT
3-1
3. EVF CIRCUIT BOARD (EVF CBA)
3. EVF RIGHT CASE (EVF-R)
1. EVF LENS (EL)
3-1

Fig. 3-5

3-3. Lens Block Removal

Caution: Since the lens block of this camera/recorder is made with high precision, never remove components other than those specified.

3-3-1. Focus motor <FM>, zoom motor <ZM>, iris block <IRIS>, position sensor <PS> and flat cable of lens <LF> (Fig. 3-6)

Components to remove in advance	Item
• Opening right case	3-1-1
• Operation switch unit <OSW>, front case <FC>, IR/LED circuit board <LR/LED CBA>, main circuit board <MAN CBA>, camera block<CAM>	3-1-3
• Auto focus circuit board <AF CBA>, process <PC CBA>, sensor <SP CBA>, camera frame <CF>, lens block <LENS>	3-1-4

Caution: Be careful not to damage the LF.

(1) Focus motor <FM>

1) Unsolder four (4) points.
2) Remove one (1) screw.

(2) Zoom motor <ZM>

1) Unsolder two (2) points.
2) Remove one (1) screw.

(3) Iris block <IRIS>

1) Disconnect one (1) flat cable.
2) Remove one (1) screw.
3) Remove the IRIS in the direction of the arrow.

Caution: Be careful not to damage the iris blades. Also take care that foreign matter such as dust, etc. does not adhere to the iris blades.

(4) Position sensor

1) Unsolder three (3) points.
2) Remove one (1) screw.

(5) Flat cable of lens <LF>

1) Unsolder four (4) points on the FM.
2) Unsolder two (2) points on the ZM.
3) Disconnect one (1) flat cable on the IRIS.
4) Unsolder three (3) points on the PS.
5) Remove three (3) screws.

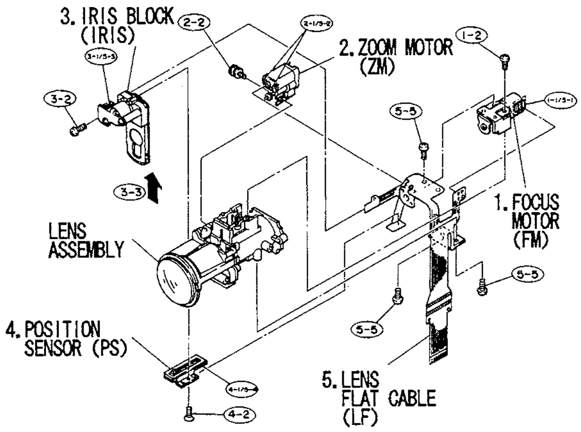

3. IRIS BLOCK (IRIS)
2-2
2-1/5-2
2. ZOOM MOTOR (ZM)
1-2
3-1/5-3
3-2
1-1/5-1
5-5
3-3
LENS ASSEMBLY
1. FOCUS MOTOR (FM)
5-5
5-5
4. POSITION SENSOR (PS)
4-1/5-4
4-2
5. LENS FLAT CABLE (LF)

Fig. 3-6

4. TAPE TRANSPORT MECHANISM DISASSEMBLY

Caution: Be sure to set the camera/recorder to the unloading/stop mode when dismantling the tape transport mechanism and reinstalling it.

Components to remove in advance	Item
• Operation switch unit <OSW>, front case <FC>, IR/LED circuit board <LR/LED CBA>, main circuit board <MAN CBA>, tape transport mechanism <TTM>	3-1-3

4-1. Subchassis Assembly Removal

4-1-1. Cassette holder <CSH> (Fig. 4-1)

Caution: Set the CSH to the eject state when removing the CSD and CSH. (Move the subchassis eject arm in the direction of arrow (A).)

(1) Cassette holder <CSH>

1) Remove three (3) screws holding the trouble sensor.
2) Remove six (6) screws.

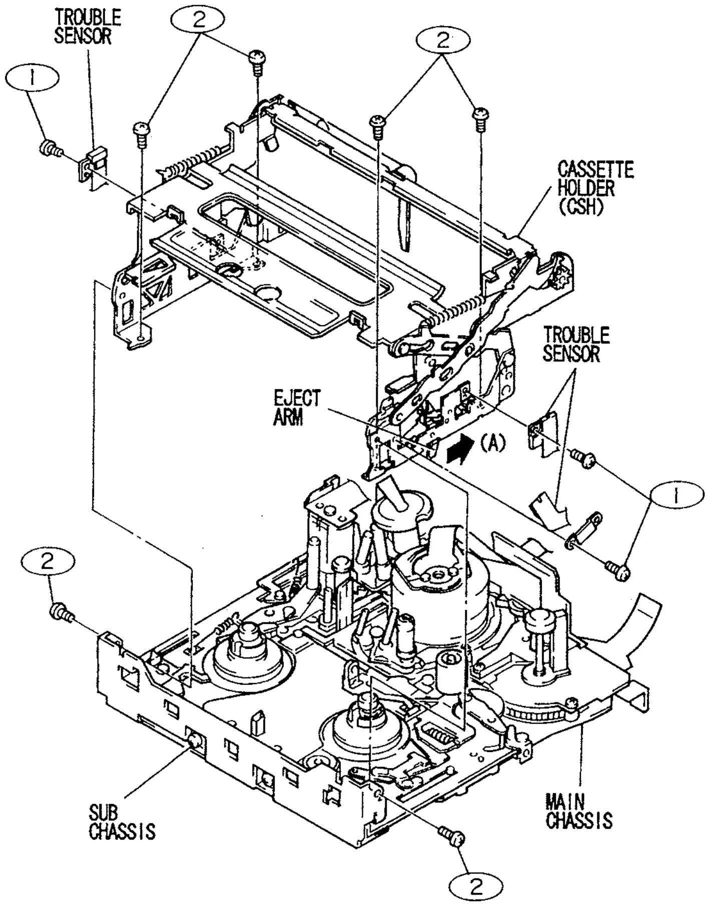

TROUBLE SENSOR
2
2
1
CASSETTE HOLDER (CSH)
TROUBLE SENSOR
EJECT ARM
(A)
1
2
SUB CHASSIS
MAIN CHASSIS
2

Fig. 4-1

4-1-2. Subchassis plate <SCP>, take-up reel disk <TRD>, idler gear <IG>, subchassis holder <SCH> and subchassis assembly <SCA> (Fig. 4-2)

Components to remove in advance	Item
• Cassette holder <CSH>	4-1-1

(1) Subchassis plate <SCP> and take-up reel disk <TRD>

1) Remove four (4) screws.
2) Release two (2) tabs holding the end LEDs.
   Caution: Be careful not to break the tabs or damage the flat cables of the end LEDs.
3) Pull out the TRD in the direction of the arrow.

(2) Idler gear <IG>

Caution: Remove the SCP and TRD in advance before removing the IG.

1) Remove one (1) washer.

(3) Subchassis holder <SCH> and subchassis assembly <SCA>

Caution: Remove the SCP, TRD and IG in advance before removing the SCH and SCA.

1) Remove one (1) screw.
2) Remove the SCH in the direction of the arrow.
3) Remove the flat cable of the mechanism state switch from the trouble sensor. (This flat cable is fixed to the trouble sensor using double-sided adhesive tape.)
   Caution: Be careful not to damage the flat cable of the mechanism state switch or trouble sensor.
4) Remove three (3) screws.
5) Remove the SCA in the direction of the arrow.

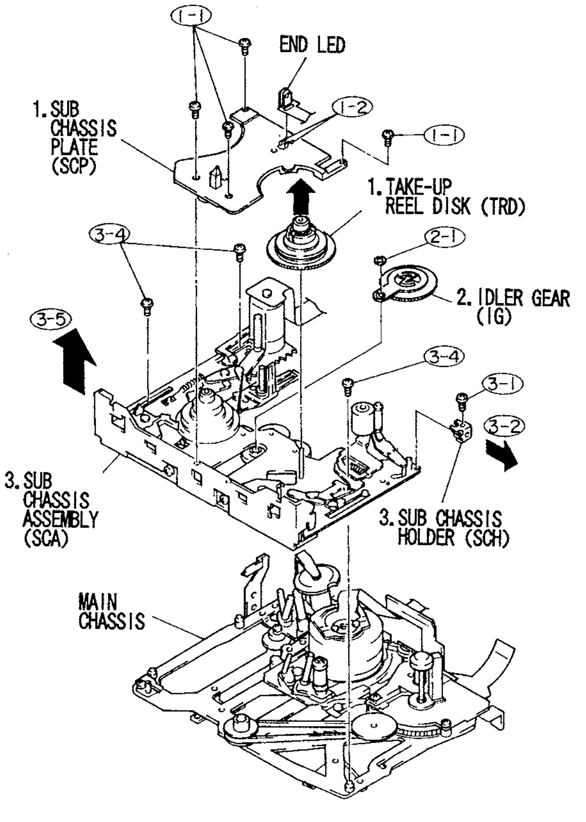

1-1
END LED
1.SUB CHASSIS PLATE (SCP)
1-2
1-1
1.TAKE-UP REEL DISK (TRD)
3-4
2-1
2. IDLER GEAR (IG)
3-5
3-4
3-1
3-2
3.SUB CHASSIS ASSEMBLY (SCA)
3.SUB CHASSIS HOLDER (SCH)
MAIN CHASSIS

Fig. 4-2

4-2. Major Components in Subchassis Removal

Components to remove in advance	Item
• Cassette holder <CSH>	4-1-1

4-2-1. Loading motor <LM>, Supply guide roller <SGR> and pressure roller brake <PRB> (Fig. 4-3)

(1) Loading motor <LM>

1) Unsolder two (2) points.
   Caution: Be careful not to damage the flat cable.
2) Remove two (2) screws.

Caution: After reinstalling the LM, be sure to perform the following adjustment.
3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3

(2) Supply guide roller <SGR>

1) Loosen the hexagonal screw.
2) Use a flat bladed screwdriver, etc. to turn the top of the SGR in the direction of the arrow. Remove the SGR from the supply guide roller base.

Caution: After reinstalling the SGR, be sure to perform the following adjustment.
4-5. Supply/Take-up Guide Roller Height Adjustment in CHAPTER 3

(3) Pressure roller brake <PRB>

1) Remove one (1) screw.

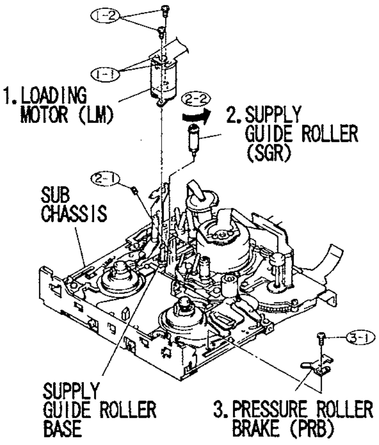

1-2
1-1
1.LOADING MOTOR (LM)
2-2
2.SUPPLY GUIDE ROLLER (SGR)
2-1
SUB CHASSIS
3-1
SUPPLY GUIDE ROLLER BASE
3.PRESSURE ROLLER BRAKE (PRB)

Fig. 4-3

4-2-2. Upper chassis <UPC> (Fig. 4-4)

1) Remove two (2) screws.

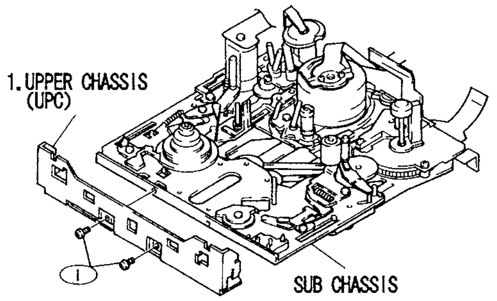

1.UPPER CHASSIS (UPC)
1
SUB CHASSIS

Fig. 4-4

4-2-3. Tension arm <T-ARM>, tension band <TBA>, supply main brake <SMB>, supply subbrake <SSB>, tension spring hook <TSF>, supply reel disk <SRD> and take-up brake <TB> (Fig. 4-5)

Components to remove in advance	Item
• Sub chassis plate <SCP>, take-up reel disk <TRD>	4-1-2

(1) Tension arm <T-ARM>, tension band <TBA>, supply main brake <SMB> and tension spring hook <TSF>

1) Remove the tension spring.
2) Remove the spring.
3) Remove one (1) washer and one (1) screw.
4) Release four (4) tabs.
5) Remove one (1) screw.

Caution: After reinstalling the T-ARM and TBA, be sure to perform the following adjustment.
4-1. Tension Pole Position/Tension Torque Adjustment in CHAPTER 3

(2) Supply subbrake <SSB> and supply reel disk <SRD>

1) Remove one (1) screw.
2) Remove the SSB and SRD in the direction of the arrow.

(3) Take-up brake <TB>

1) Remove one (1) washer.

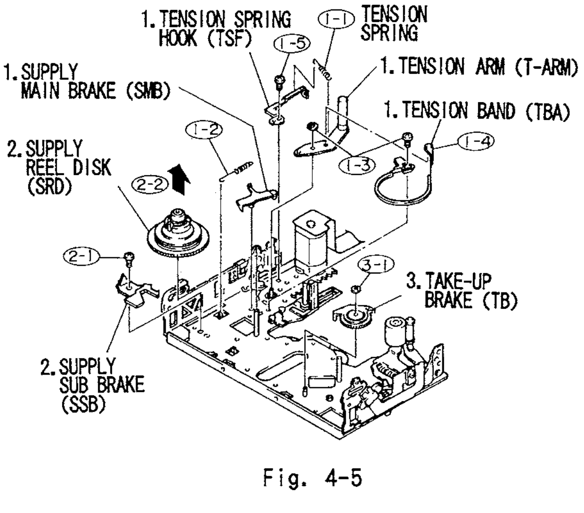

1.TENSION SPRING HOOK (TSF)
1-1
TENSION SPRING
1-5
1.SUPPLY MAIN BRAKE (SMB)
1.TENSION ARM (T-ARM)
1.TENSION BAND (TBA)
1-2
1-4
1-3
2.SUPPLY REEL DISK (SRD)
2-2
2-1
3-1
3.TAKE-UP BRAKE (TB)
2.SUPPLY SUB BRAKE (SSB)

Fig. 4-5

4-2-4. Pull-out arm <POA>, pressure roller <PR>, pressure roller drive arm <PDA>, trouble sensor <TRS>, supply guide roller base <SGB> and supply guide roller rail <SRR> (Fig. 4-6)

Caution 1: It is not necessary to remove components in items 4-2-1 and 4-2-2 when removing only the POA.
Caution 2: When removing only the PR and PDA, remove the SCA and then the PRB.
Caution 3: When removing only the SGB and SRR, remove the SCA and then the SGR, T-ARM, TBA and SMB.

Components to remove in advance	Item
• Subchassis plate <SCP>, take-up reel disk <TRD>, idler gear <IG>, subchassis holder <SCH>, subchassis assembly <SCA>	4-1-2
• Supply guide roller <SGR>, pressure roller brake <PRB>	4-2-1
• Tension arm <T-ARM>, tension band <TBA>, supply main brake <SMB>, supply subbrake <SSB>, tension spring hook <TSF>, supply reel disk <SRD>, take-up brake <TB>	4-2-3

(1) Pull-out arm <POA>

1) Remove one (1) washer from the back of the SCA.
Caution: Take care that the spring between the POA and SCA is removed on its own when the POA is removed.
Fig. 4-6 shows the positions of POA and SCA to which the spring is hooked.

(2) Pressure roller <PR> and pressure roller drive arm <PDA>

1) Remove one (1) washer from the back of the SCA.

(3) Trouble sensor <TRS>

Caution: Remove the PR and PDA in advance.
3) Unsolder two (2) points.
Caution: Be careful not to damage the TRS (flat cable).
4) Remove one (1) screw holding the TRS (safety tab/tape select switch) and remove the TRS from the SCA. (The TRS is fixed to the SCA using double-sided adhesive tape.)
Caution: Be careful not to damage the TRS (flat cable).

(4) Supply guide roller base <SGB> and supply guide roller rail <SRR>

1) Remove one (1) washer at the back of the SCA.
2) Remove the SGB in the direction of the arrow, moving it along the groove in the SRR.
3) Remove two (2) screws and one (1) washer.

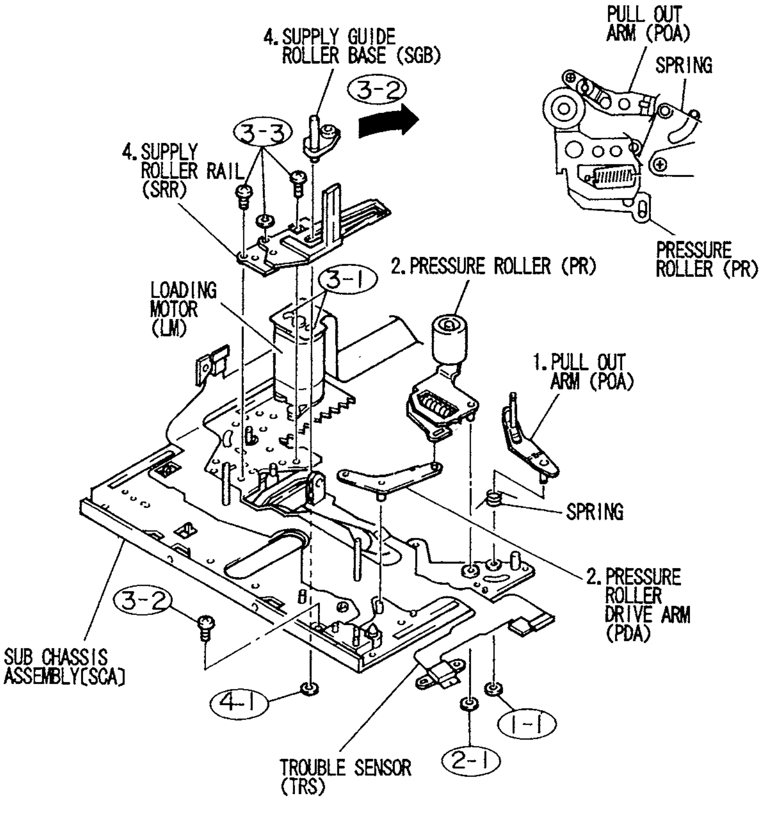

4. SUPPLY GUIDE ROLLER BASE (SGB)
3-2
3-3
4. SUPPLY ROLLER RAIL (SRR)
PULL OUT ARM (POA)
SPRING
PRESSURE ROLLER (PR)
LOADING MOTOR (LM)
3-1
2. PRESSURE ROLLER (PR)
1. PULL OUT ARM (POA)
SPRING
2. PRESSURE ROLLER DRIVE ARM (PDA)
3-2
SUB CHASSIS ASSEMBLY[SCA]
4-1
1-1
TROUBLE SENSOR (TRS)
2-1

Fig. 4-6

4-2-5. Mechanism state switch <MSW>, loading gears 1 <LG1>, 2 <LG2> and 3 <LG3>, cam gear <CG>, cam arm <CA>, take-up slider <TUS> and pressure roller cam gear <PGA> (Fig. 4-7)

Caution 1: Remove the LM only when removing the LG1, LG2 and LG3.
Caution 2: Remove the UPC only when removing the CG, CA and TUS.
Caution 3: Remove components in items 4-2-3 and 4-2-4 only when removing the TUS.
Caution 4: Remove the TUC only when removing the PCG.

Components to remove in advance	**Item**
• Subchassis plate <SCP>, take-up reel disk <TRD>, idler gear <IG>, subchassis holder <SCH>, subchassis assembly <SCA>	4-1-2
• Loading motor <LM>, Supply guide roller <SGR>	4-2-1
• Upper chassis <UPC>	4-2-2
• Tension arm <T-ARM>, tension band <TBA>, supply main brake <SMB>, supply subbrake <SSB>, supply reel disk <SRD>,	4-2-3
• supply guide roller base <SGB> and supply guide roller rail <SRR>	4-2-4

(1) Mechanism state switch <MSW>

1) Remove one (1) screw.

Caution: After reinstalling the MSW, be sure to perform the following adjustment.
3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3

(2) Loading gears 1, 2, 3 <LG1>, <LG2>, <LG3>

1) Remove one (1) screw.
2) Remove the loading gear plate in the direction of the arrow.

Caution: After reinstalling the LG1, LG2 and LG3, be sure to perform the following adjustment.
3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3

(3) Cam gear <CG>, cam arm <CA> and take-up slider <TUS>

1) Remove one (1) screw.
2) Remove the CG in the direction of the arrow.
3) Remove the TUS in the direction of the arrow.

Caution: After reinstalling the CG, CA and TUS, be sure to perform the following adjustment.
3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3

(4) Pressure roller cam gear <PCG>

1) Remove one (1) screw.
2) Move the eject arm in the direction of the arrow to remove the PCG.

Caution: After reinstalling the PCG, be sure to perform the following adjustment.
3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3

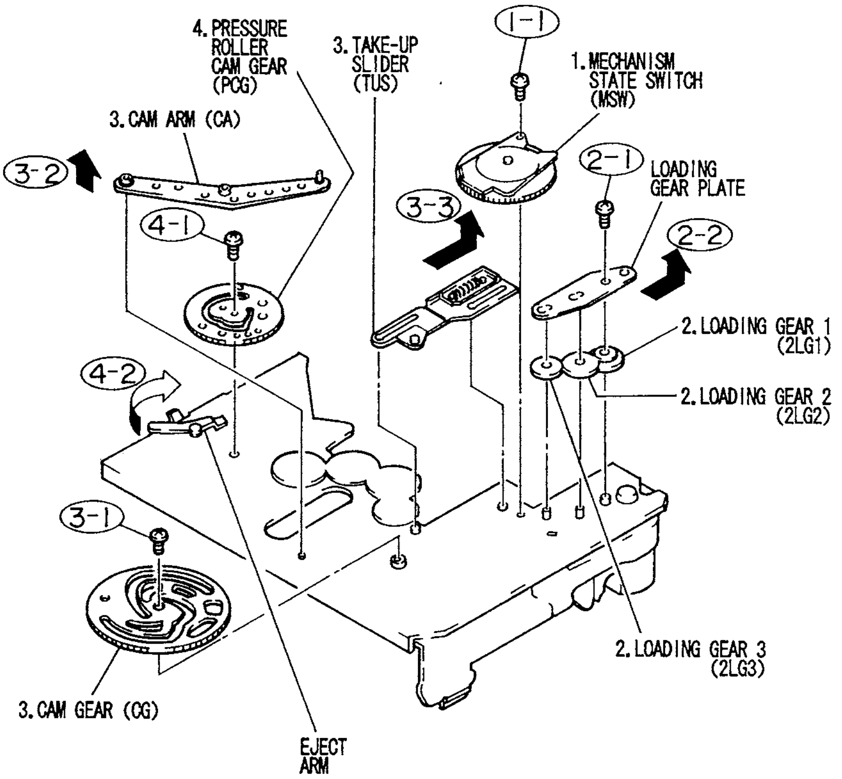

4. PRESSURE ROLLER CAM GEAR (PCG)
3. TAKE-UP SLIDER (TUS)
1-1
1. MECHANISM STATE SWITCH (MSW)
3. CAM ARM (CA)
3-2
2-1
LOADING GEAR PLATE
3-3
4-1
2-2
2. LOADING GEAR 1 (2LG1)
4-2
2. LOADING GEAR 2 (2LG2)
3-1
2. LOADING GEAR 3 (2LG3)
3. CAM GEAR (CG)
EJECT ARM

Fig. 4-7

4-3. Major Components in Main Chassis Removal

Caution: Attach the Cassette holder <CSH> before removing the MCB1, MCB2, MCB3 and MCB4.

Components to remove in advance	Item
• Cassette Holder <CSH>	4-1-1

4-3-1. Main chassis brackets 1 <MCB1>, 2 <MCB2>, 3 <MCB3>, 4 <MCB4>, dew sensor <DEW> (Fig. 4-8)

(1) Main chassis bracket 1 <MCB1>

1) Remove two (2) screws.

(2) Main chassis bracket 2 <MCB2>

1) Remove one (1) screw.

(3) Main chassis bracket 3 <MCB3> and dew sensor <DEW>

1) Remove two (2) screws.
2) Remove one (1) screw.

(4) Main chassis bracket 4 <MCB4>

1) Remove two (2) screws.

Caution: Reinstall the MCB1, MCB2, MCB3 and MCB 4 after installing the cassette holder.

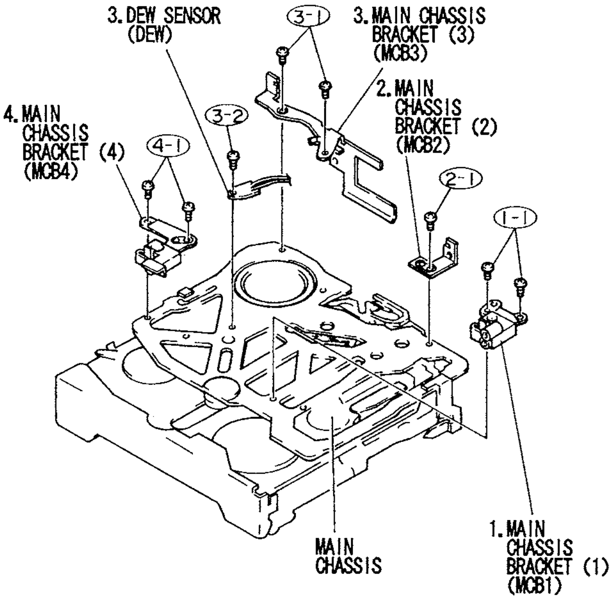

3.DEW SENSOR (DEW)
3-1
3.MAIN CHASSIS BRACKET (3) (MCB3)
3-2
2.MAIN CHASSIS BRACKET (2) (MCB2)
4.MAIN CHASSIS BRACKET (4) (MCB4)
4-1
2-1
1-1
MAIN CHASSIS
1.MAIN CHASSIS BRACKET (1) (MCB1)

Fig. 4-8

4-3-2. Cylinder assembly <CYL> and guide plate <GP> (Fig. 4-9)

(1) Cylinder assembly <CYL>

1) Remove three (3) screws.

Caution 1: Do not touch video head tips with your fingers or tools, etc. during work.

Caution 2: Reinstall the CYL last (before installing the SCH).

Caution 3: After reinstalling the CYL, be sure to perform the following adjustment.

5. ADJUSTMENTS AFTER REPLACING THE CYLINDER in CHAPTER 3

(2) Guide plate <GP>

1) Remove two (2) screws.

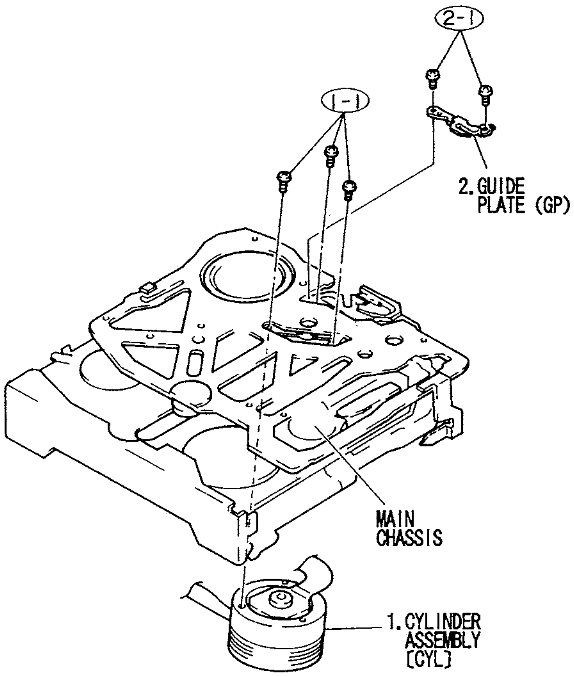

2-1
1-1
2.GUIDE PLATE (GP)
MAIN CHASSIS
1.CYLINDER ASSEMBLY [CYL]

Fig. 4-9

4-3-3. Guide roller rail <GRR>, capstan motor <CPM>, sub-guide plate <SGP>, take-up guide roller <TGR>, impedance roller plate <IRP> and impedance roller <IMR> (Fig. 4-10)

(1) Guide roller rail <GRR>, capstan motor <CPM> and sub-guide plate <SGP>

1) Remove three (3) screws.
2) Remove one (1) screw.
3) Remove one (1) screw.

(2) Take-up guide roller <TGR>

1) Loosen the hexagonal screw.
2) Use a flat bladed screwdriver, etc. to turn the top of the TGR in the direction of arrow (A).

Caution: After reinstalling the TGR, be sure to perform the following adjustment.
4-5. Supply/Take-up Guide Roller Height Adjustment in CHAPTER 3

(3) Impedance roller plate <IRP> and impedance roller <IMR>

1) Remove one (1) screw.
2) Remove the IRP and IMR in the direction of the arrows.

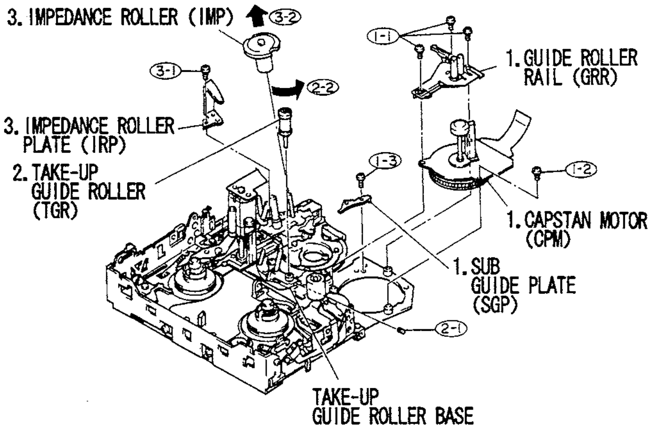

3. IMPEDANCE ROLLER (IMP)
3-2
1-1
1. GUIDE ROLLER RAIL (GRR)
3-1
2-2
3. IMPEDANCE ROLLER PLATE (IRP)
2. TAKE-UP GUIDE ROLLER (TGR)
1-3
1-2
1. CAPSTAN MOTOR (CPM)
1. SUB GUIDE PLATE (SGP)
2-1
TAKE-UP GUIDE ROLLER BASE

Fig. 4-10

4-3-4. Take-up guide roller base <TGB>, take-up slant pole <TSP>, guide roller base plate <GBP>, centre gear <CG>, pulley gear <PG> and capstan belt <CB> (Fig. 4-11)

Components to remove in advance	Item
• Subchassis plate <SCP>, take-up reel disk <TRD>, idler gear <IG>, subchassis holder <SCH>, subchassis assembly <SCA>	4-1-2
• Guide roller rail <GRR>, capstan motor <CPM>, take-up guide roller <TGR>	4-3-3

(1) Take-up guide roller base <TGB> and take-up slant pole <TSP>

1) Remove one (1) washer.
2) Remove one (1) washer.
3) Remove the TGB and TSP in the direction of the arrows, moving them along the groove in the GBP.

(2) Guide roller base plate <GBP>

Caution: Remove TGB and TSP in advance before removing GBP.
1) Remove three (3) screws.

(3) Centre gear <CG>, pulley gear <PG> and capstan belt <CB>

1) Remove one (1) washer.
2) Remove CG and PG together with CB.

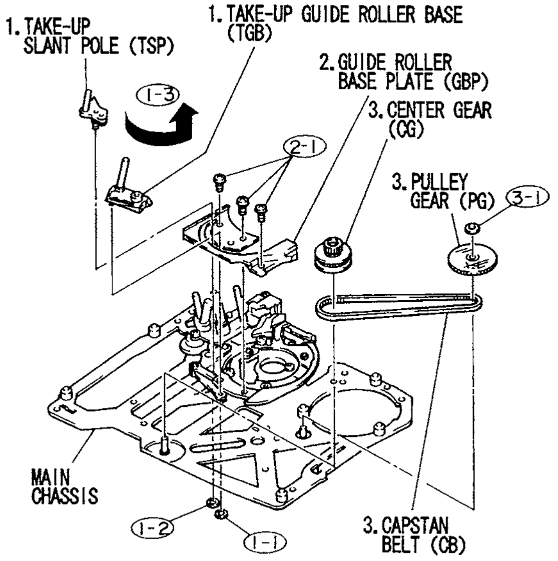

1. TAKE-UP SLANT POLE (TSP)
1. TAKE-UP GUIDE ROLLER BASE (TGB)
2. GUIDE ROLLER BASE PLATE (GBP)
3. CENTER GEAR (CG)
1-3
2-1
3. PULLEY GEAR (PG)
3-1
MAIN CHASSIS
1-2
1-1
3. CAPSTAN BELT (CB)

Fig. 4-11

4-3-5. Impedance roller base <IRB>, ring gears 1 <RG1>, 2 <RG2> and 3 <RG3>, cylinder base <CYB> and loading ring <LR> (Fig. 4-12)

Components to remove in advance	Item
• Subchassis plate <SCP>, take-up reel disk <TRD>, idler gear <IG>, subchassis holder <SCH>, subchassis assembly <SCA>	4-1-2
• Cylinder assembly <CYL> and guide plate <GP> (Fig. 4-9)	4-3-2
• Guide roller rail <GRR>, capstan motor <CPM>, sub-guide plate <SGP>, take-up guide roller <TGR>, impedance roller plate <IRP> and impedance roller <IMR>	4-3-3
• Take-up guide roller base <TGB>, take-up slant pole <TSP>, guide roller base plate <GBP>	4-3-4

(1) Impedance roller base <IRB> and ring gears 1 <RG1>, 2 <RG2>, 3 <RG3>

1) Remove two (2) screws.
2) Remove one (1) screw.
3) Remove the RG1, RG2 and RG3.

Caution: After reinstalling the IRB, RG1, RG2 and RG3, be sure to perform the following adjustment.

3. PHASE MATCHING IN ASSEMBLY IN CHAPTER 3

(2) Cylinder base <CYB> and loading ring <LR>

Caution: Remove the IRB in advance before removing the CYB and LR.

1) Remove three (3) screws.
2) Remove four (4) washers.

Caution: After reinstalling the CYB and LR, be sure to perform the following adjustment.

3. PHASE MATCHING IN ASSEMBLY in CHAPTER 3

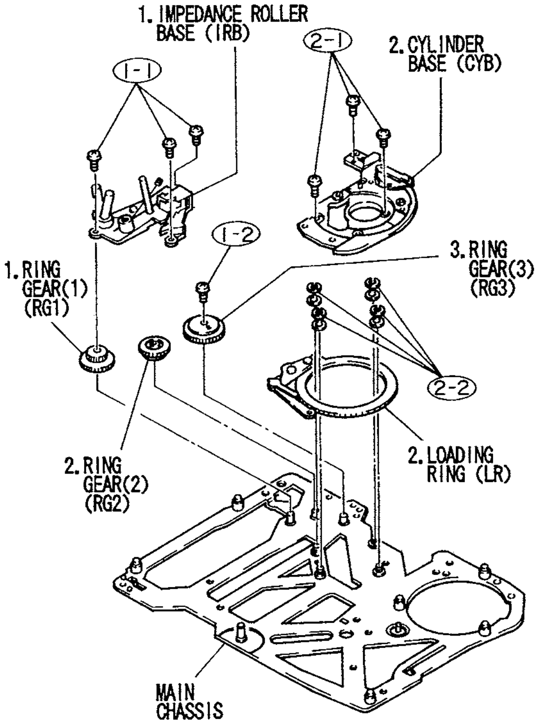
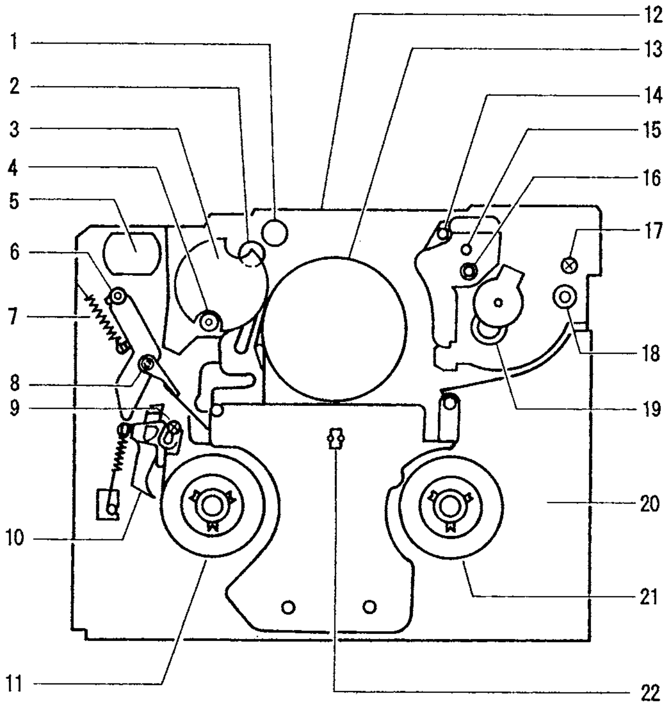

1. IMPEDANCE ROLLER BASE (IRB)
2-1
2. CYLINDER BASE (CYB)
1-1
1-2
3. RING GEAR(3) (RG3)
1. RING GEAR(1) (RG1)
2-2
2. LOADING RING (LR)
2. RING GEAR(2) (RG2)
MAIN CHASSIS

Fig. 4-12

MECHANISM ADJUSTMENT

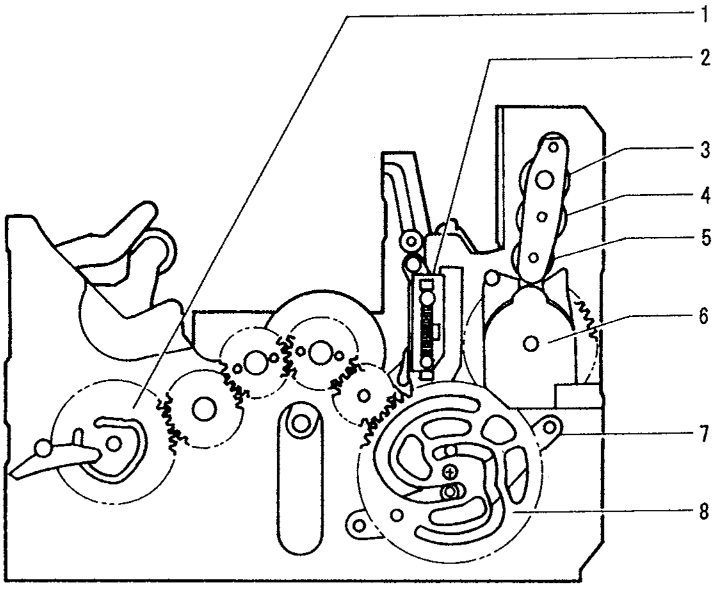
1. MAJOR MECHANICAL COMPONENTS

Letters in < > are the abbreviations of components used in this manual.



1. TAKE-UP GUIDE ROLLER [TGR]
2. SUPPLY GUIDE ROLLER [SGR]
3. IMPEDANCE ROLLER [IMP]
4. SUPPLY GUIDE POLE [SGP]
5. LOADING MOTOR (LM)
6. TENSION POLE [T-ARM]
7. TENSION SPRING
8. TENSION BAND [TSB]
9. TENSION BAND HOLDER HOLD SCREW
10. TENSION BAND HOLDER
11. SUPPLY REEL DISK [SRD]
12. MAIN CHASSIS ASSEMBLY
13. CYLINDER [CYL]
14. TAKE-UP SLANT POLE [TSP]
15. HEIGHT ADJUST NUT
16. TAKE-UP GUIDE POLE [TGP]
17. SLANT ADJUST SCREW
18. PULL OUT ARM [POA]
19. PRESSURE ROLLER [PR]
20. SUB CHASSIS ASSEMBLY [SCA]
21. TAKE-UP REEL DISK [TRD]
22. END LED [END LED]

Fig. 1-1 Top View of Mechanism



1. PRESSURE ROLLER CAM GEAR [PCG]
2. TAKE-UP CYLINDER [TUS]
3. LOADING GEAR (1) [LG1]
4. LOADING GEAR (2) [LG2]
5. LOADING GEAR (3) [LG3]
6. MECHANISM STATE SWITCH [MSW]
7. CAM ARM [CA]
8. CAM GEAR [CG]

Fig. 1-2 Back of Subchassis

2. BEFORE STARTING ADJUSTMENT

- Be sure to set the camera/recorder to the unloading/stop mode when dismantling the tape transportblock.
- Do not re-use washers once they have been removed.
- Remove the components shown in the table below beforehand, referring to CHAPTER 2 DISASSEMBLY. Reinstall the main circuit board and operation switch unit onto the tape transport block after removing the left case.

Components to remove in advance	**Item**
• Cassette lid, opening right case	3-1-1
• Top cover	3-1-2
• Operation switch unit, front case, main circuit board, tape transport block	3-1-3

- With this camera/recorder, the mechanical adjustment (tape transport system check/adjustment) can be done with the unassembled VTR block (without connecting the camera block).
- To set the camera/recorder to the playback mode without loading a cassette, shut off the light striking the end LEDs in the subchassis and press the playback button on the operation switch unit. (Shut off the light striking the end LEDs in the eject state.)

3. PHASE MATCHING IN ASSEMBLY

Caution 1: In this paragraph, the phases of each components are aligned in the unloading/stop mode.
Be sure to set the camera/recorder to the unloading/stop mode before dismantling the tape transport block.

3-1. Subchassis Assembly (Figs. 3-1, 3-2)

Caution: Be sure to match the phases of each component when reinstalling the loading motor <LM>, mechanism state switch <MSW>, loading gears 1 <LG1>, 2 <LG2> and 3 <LG3>, cam gear <CG>, take-up slider <TUS> and pressure roller cam gear <PCG>.

● Procedure of phase matching in assembly

1) Align mark (A) on the MSW and mark (F) on the MSW gear. Although the sizes of marks (A) and (F) are different in the illustration, they are actually the same. (See Fig. 3-1)
2) Align hole (C) and the hole in the subchassis. (See Fig. 3-2)
3) Align holes (A) and (B).
4) Align hole (D) and the hole in the subchassis.
5) Align the triangular hole in the subchassis and the bottom of the gear teeth.
6) Align hole (E) and the hole in the subchassis.
7) Check the relationship of the installation positions between the CG, TUS and cam arm <CA>.
8) Check that the phases of components in the main chassis are matched correctly, referring to the following paragraph.
9) Install the subchassis assembly, kept in the above condition, onto the main chassis assembly.

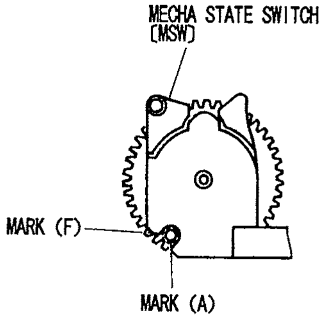


Fig. 3-1

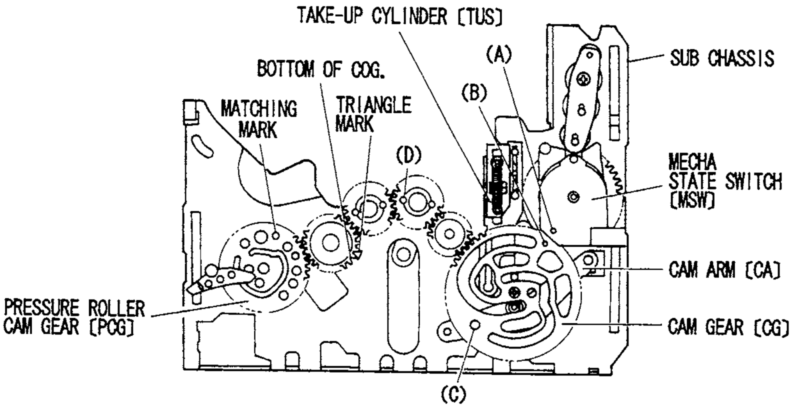


Fig. 3-2

3-2. Main Chassis Assembly (Fig. 3-3)

Caution: Be sure to match the phases of each component when reinstalling the loading impedance roller base <IRB>, ring gears 1 <RG1>, 2 <RG2> and 3 <RG3>, loading ring <LR> and subchassis assembly.

- **Procedure of phase matching in assembly**

1) Align hole (A) and the hole in the main chassis. (See Fig. 3-3)
2) Align holes (B) and (C).
3) Align holes (D) and (E).
4) Check that hole (F) is directed toward the RG1 axis.
5) Align hole (G) and the hole in the main chassis.
6) Check that hole (H) is directed toward arrow (J).

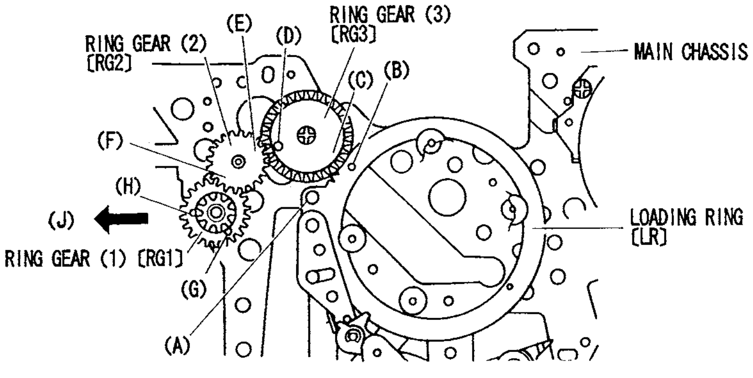


Fig. 3-3

4. TAPE TRANSPORT SYSTEM CHECK/ADJUSTMENT

The tape transport system is a generic term for the path from the supply reel disk to the take-up reel disk via the cylinder. The tape transport components, especially the components which come into direct contact with the tape, should be kept clean without damage, dust or oil, etc. adhering to the contact surfaces. The tape transport system is adjusted before shipment from the factory, so perform adjustments only when components of the transport system are replaced or adjustments of the transport system have drifted.

4-1. Tension Pole Position/Tension Torque Adjustments (Fig. 4-1)

Caution: Be sure to perform these adjustments after reinstalling the tension arm <T-ARM>, tension band <TSB>, tension spring and tension hook <TSF>.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
		• Shut off the light striking the end LEDs and set to the playback mode without loading a cassette	• Tension band holder
• Cassette torque meter (SRK-8T-212)	• Load a cassette torque meter.	• Set to the playback mode.	• Tension spring

- **Adjustment procedure**

♦ Tension pole position adjustment (Fig. 4-1)

1) Hook the tension spring to position (C) of the TSF.
2) Loosen screw (Z) holding tension band holder (Y).
3) Adjust position of (Y) so that only half the hole in the subchassis can be seen.
4) Tighten screw (Z).

♦ Tension torque adjustment (Fig. 4-1)

1) Hook the tension spring to position (C) of the TSF.
2) Set the tension torque on the supply side to 5 - 6 g-cm.
   If it is more than 6 g-cm: Move the tension spring to position (D) of the TSF.
   If it is less than 5 g-cm: Move the tension spring to position (B) or (A).

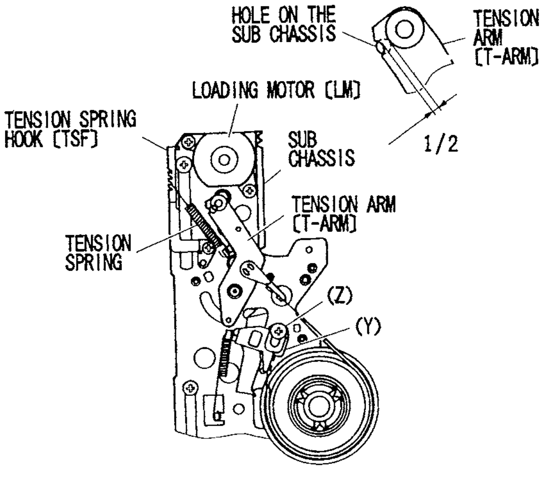


Fig. 4-1

4-2. Supply Guide Pole Height Check/Adjustment (Fig. 4-2)

Caution: Be sure to check this item after reinstalling the supply guide pole <SGP> and impedance roller base <IRB>.
Basically, the SGP height should not be adjusted.
Adjust the SGP height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Special driver		• Load a blank tape and set to the playback mode.	• Top of SGP

● Checking procedure

1) Check that the bottom edge of tape and the lower flange of the SGP are aligned.
2) Check that there is no curling or creasing of tape around the flanges.

● Adjustment procedure

1) Loosen hexagonal screw (A) holding the SGP.
2) Adjust the SGP height so that two check items above are satisfied.
3) Be careful not to make the SGP too high.
4) Tighten hexagonal screw (A).

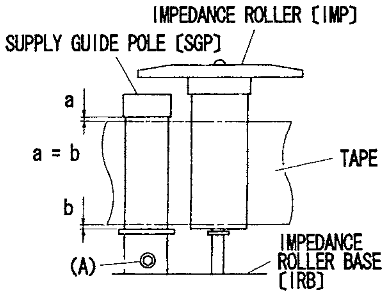

IMPEDANCE ROLLER [IMP]
SUPPLY GUIDE POLE [SGP]
a
a = b
TAPE
b
IMPEDANCE ROLLER BASE [IRB]
(A)

Fig. 4-2

4-3. Take-up guide pole height adjustment (Figs. 4-3, 4-4)

Caution: Be sure to check this item after reinstalling the take-up guide pole <TGP> and guide roller rail <GRR>.
Basically, the TGP height should not be adjusted.
Adjust the TGP height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Special driver		• Load a blank tape and set to the playback mode.	• Height adjustment nut • Top of TGP

● Adjustment procedure

1) Adjust the height adjustment nut so the tape travels at the centre of take-up slant pole <TSP>. (See Fig. 4-3)
2) Adjust the height adjustment nut so the distance between the top edges of tape and the TSP is half that between their bottom edges. (See Fig. 4-4)
3) Turn the top of the TGP so the bottom edge of tape is aligned with the lower flange of the TGP.

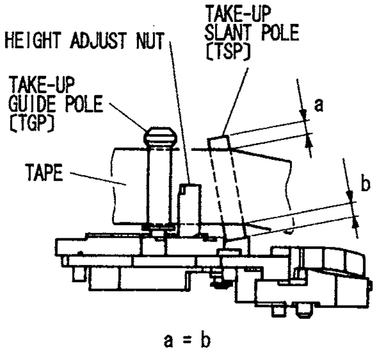

HEIGHT ADJUST NUT
TAKE-UP SLANT POLE [TSP]
TAKE-UP GUIDE POLE [TGP]
a
TAPE
b
a = b

Fig. 4-3

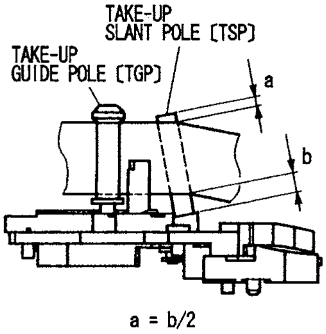

TAKE-UP SLANT POLE [TSP]
TAKE-UP GUIDE POLE [TGP]
a
b
a = b/2

Fig. 4-4

4-4. Pull-out Arm Height Adjustment (Fig. 4-5)

Caution: Be sure to check this item after reinstalling the pull-out arm <POA>.
Basically, the POA height should not be adjusted.
Adjust the POA height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Special driver		• Load a blank tape and set to the playback mode. • Reverse search mode.	• Top of POA • Slant adjustment screw

● Adjustment procedure

1) Turn the top of the POA so the tape travels at the centre of the POA's tape guide.
2) Set to the reverse search mode.
3) Turn the slant adjustment screw so the tape travels at the centre of the tape guide.
4) Set to the playback mode and check that the tape is travelling at the centre of the tape guide.

Caution: If item 4) can be confirmed, this adjustment is complete. If it cannot be confirmed, continue adjustment as follows.

5) Set to the reverse search mode.
6) Fine adjust the slant adjustment screw so the tape travels at a little higher than the centre.
7) Repeat steps 4) - 6) and check that the tape transport positions are satisfied in the playback and reverse search modes.

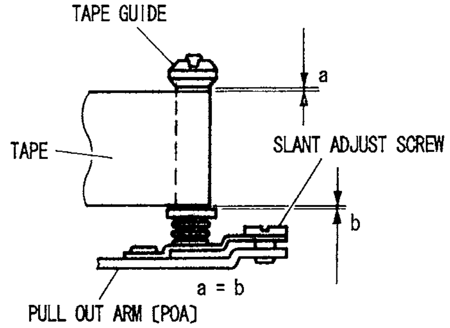


Fig. 4-5

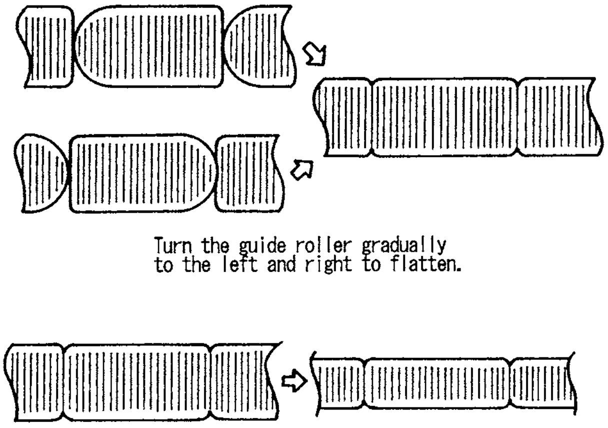
4-5. Supply/Take-up Guide Roller Height Adjustment (Fig. 4-6)

Caution: Be sure to check this item after reinstalling the supply guide roller <SGR> and take-up guide roller <TGR>.
Basically, the height of the SGR and TGR should not be adjusted.
Adjust these heights only if they are abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Alignment tape • Oscilloscope • ATF-R jig • Special driver	• PG601 on Main board • TP1 (SW25) on ATF-R jig • TP2 (GND) on ATF-R jig • TP3 (FM OUT) on ATF-R jig	• Connect the ATF-R jig to PG601. • ATF-R jig (SW1:OFF, SW3: ON, RT1:mechanical centre)	• Top of SGR • Top of TGR

● Adjustment procedure

1) Load a blank tape and set to the playback mode.
2) Check that no curling or creasing of the tape occurs around the SGR or TGR. If curling or creasing occurs, fine adjust the heights of the SGR and TGR.
3) Connect an oscilloscope to TP3 on the ATF-R jig.
4) Synchronize the oscilloscope with TP1 (SW25) on the ATF-R jig.
5) Load an alignment tape that has been completely rewound and set to the playback mode.
6) Check that the FM waveform at TP3 is flat.
7) Set SW1 on the ATF-R jig to ON and turn RT1 to the left and right. Check that the FM waveform level drops at an equal angle when RT1 is turned to the left and right.
8) If the specifications in steps 6) and 7) cannot be confirmed, adjust the heights of the SGR and TGR so that these can be satisfied.


Turn the guide roller gradually to the left and right to flatten.

RT1 on ATF jig:
Turn RT1 on ATF jig to the left and right

Fig. 4-6

5. Adjustment After Replacing the Cylinder (Fig. 5-1)

When the cylinder is replaced, the height relative to the guide roller drifts, therefore the tape transport system and servo circuit should be adjusted.
Check and adjust in the following order.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Alignment tape • Oscilloscope • ATF-R jig • Special driver	• PG601 on Main board • TP1 (SW25) on ATF-R jig • TP2 (GND) on ATF-R jig • TP3 (FM OUT) on ATF-R jig	• Connect the ATF-R jig to PG601. • ATF-R jig (SW1:OFF, SW3: ON, RT1:mechanical centre)	• Top of SGR • Top of TGR

● Adjustment procedure

1) Load a blank tape and set to the playback mode.
2) Check that no curling or creasing of the tape occurs around the guide rollers. If curling or creasing occurs, fine adjust the height of the guide rollers.
3) Load an alignment tape and set to the playback mode.
4) Connect an oscilloscope to TP3 on the ATF-R jig.
5) Synchronize the oscilloscope with TP1 (SW25) on the ATF-R jig.
6) Adjust the voltage level control of the oscilloscope to set the maximum amplitude of the FM output to 4 graduations. (See Fig. 5-1)
7) Check that the FM output is flat. Set SW1 on the ATF-R jig to ON and adjust RT1 to set the maximum amplitude of the FM output to 3 graduations. Check that the minimum amplitude is set to 1.8 graduations.
8) If the specification in step 7) cannot be confirmed, adjust the heights of the SGR and TGR so the specification in step 7) can be satisfied.
9) Perform the following electric adjustments, referring to CHAPTER 4.
   - Head switching point
   - Recording level adjustment

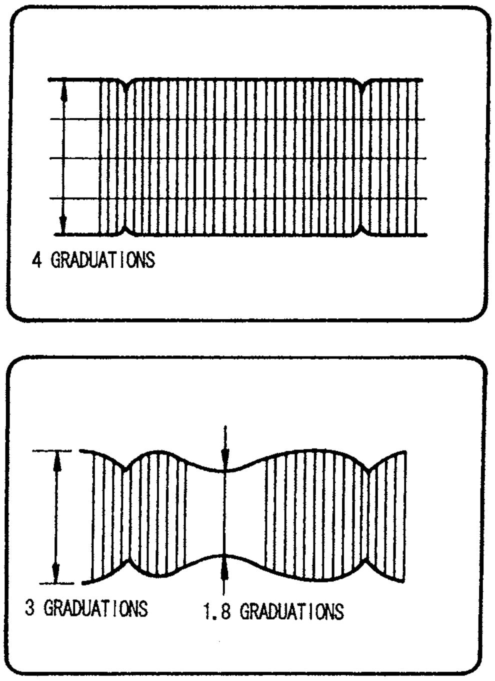


Fig. 5-1

6. CHECKING THE TORQUE

There are two types of cassette torque meter. Choose the applicable one for the measurement to be performed.

Item	VTR mode	Measured reel disk	Torque value	Torque cassette used
Take-up torque	Playback	Take-up	7-13 g-cm	SRK-8T-212 SRK-8T-232
Rewind torque	Reverse search	Supply	20-34 g-cm	SRK-8T-232
Take-up brake torque	Reverse search to stop	Take-up	10 g-cm or more	SRK-8T-212 SRK-8T-232
Slack removal torque	Unloading	Supply	20-34 g-cm	SRK-8T-232

CHAPTER 4

ELECTRICAL ADJUSTMENT

Note 1: Use a personal computer for camera adjustments other than the following.
- VCO Lock Voltage Confirmation

Note 2: The digital adjustment program for the camera is called the MAP (Manual Adjustment Program).

Note 3: DSP is an abbreviation for the digital signal processor.

1. CONNECTION FOR ADJUSTMENT

Remove the components, etc. listed below first, referring to CHAPTER 2 DISASSEMBLY.
(See Fig. 4-1)

Note 1: It is not necessary to remove cases for digital adjustment.

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette lid, Opening the Right Case, Right Case	3-1-1

Note 2: To adjust the camera analogue and electronic vatiable resistor, remove the following components and then use an extension cable to connect the camera/recorder and test equipment so the camera and VTR blocks can be adjusted.

ORDER FOR REMOVING PARTS	ITEM No.
• Operation Switch Unit, Front Case, IR/LED Circuit Board, Main Circuit Board, Camera Block	3-1-3

Note 3: If it is necessary to display operation modes, connect the EVF.

2. CAMERA SECTION ADJUSTMENT

2-1. CIRCUIT BOARD LOCATIONS AND ADJUSTMENT SERVICE POSITION

1. Sensor Circuit Board
2. Autofocus Circuit Board
3. Process Circuit Board

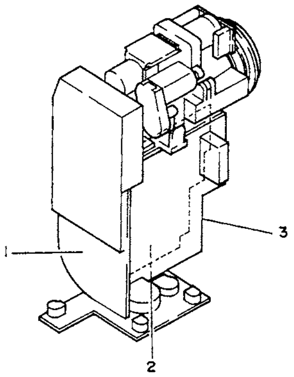


Fig. 2-1

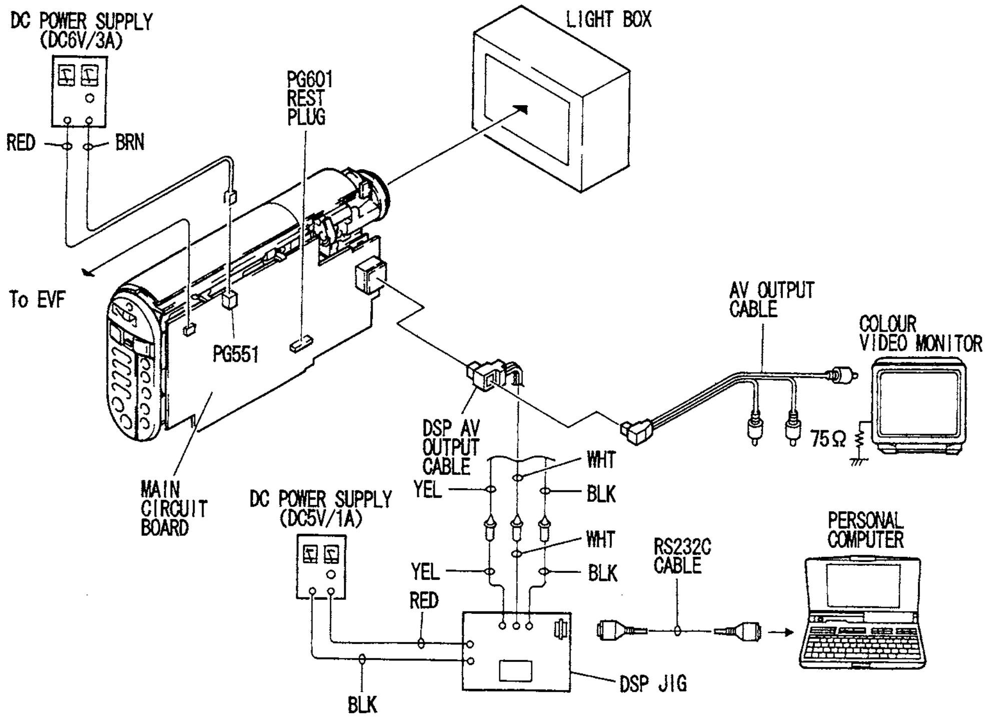

DC POWER SUPPLY
(DC6V/3A)
RED
BRN
PG601
REST
PLUG
LIGHT BOX
To EVF
PG551
MAIN
CIRCUIT
BOARD
AV OUTPUT
CABLE
COLOUR
VIDEO MONITOR
75Ω
DSP AV
OUTPUT
CABLE
WHT
YEL
BLK
DC POWER SUPPLY
(DC5V/1A)
WHT
YEL
BLK
RED
RS232C
CABLE
PERSONAL
COMPUTER
DSP JIG
BLK

Fig. 1-1

2-2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

- Test Equipment
  Oscilloscope (dual trace)
  [Vectorscope]
  Digital Voltmeter (DVM)
  Frequency Counter
  Colour Video Monitor
- Charts, etc.
  Camera Adj. Floppy Disk
  Personal Computer
  Personal Computer 9-pin or 25-pin Cable
  DSP Jig
  DSP AV Output Cable
  Gray Scale Chart
  Colour Bar Chart
  Resolution Chart
  Backfocus Adjustment Chart
  Light Box (3100°K)
  Light Balancing Filter C12
  DC Power Supply (DC6V/3A)
  DC Power Supply (DC5V/1A)
  Calculator

2-3. ADJUSTMENT CONDITION

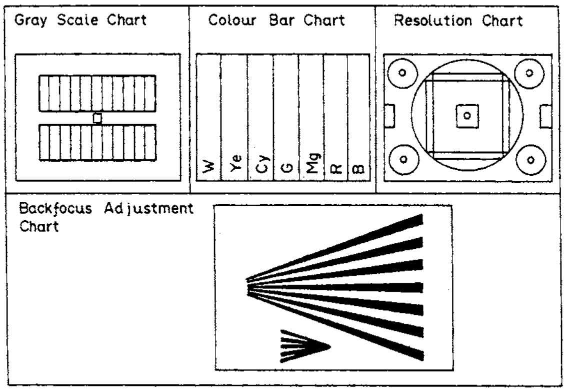
1) Check that the VTR section has been adjusted correctly before adjusting the camera section.
2) Use a light box with minimum flickering. Control the colour temperature of the light box strictly.
3) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
4) When using the video out (AV OUT) to perform adjustment, be sure to terminate the AV OUT jack with 75 ohms.
5) Place the chart (light box) 40cm away from the camera (lens surface) when otherwise not specified.
6) Point the camera at the chart to fill the video period when otherwise not specified.
7) Use the 10:1 probe of the oscilloscope when otherwise not specified.
8) When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10µs/div.

2-4. PRESET POSITION OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ..... "CAMERA" position
- DATE .... Not Display mode
- DISPLAY .... Not Display mode
- TITLE .... Not Display mode
- D.FILTER .... Normal mode
- FADE .... Normal mode
- FOCUS .... Manual mode

2-5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 2-1


Gray Scale Chart
Colour Bar Chart
Resolution Chart
W
Ye
Cy
G
Mg
R
B
Backfocus Adjustment Chart

2-6. ADJUSTMENT COMPONENTS LOCATIONS

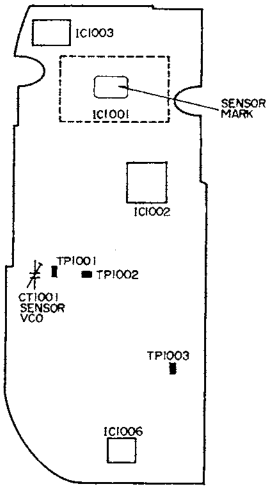

IC1003
IC1001
SENSOR MARK
IC1002
TP1001
TP1002
CT1001 SENSOR VCO
TP1003
IC1006

Fig. 2-2 SENSOR (SP) Circuit Board [Side-A]

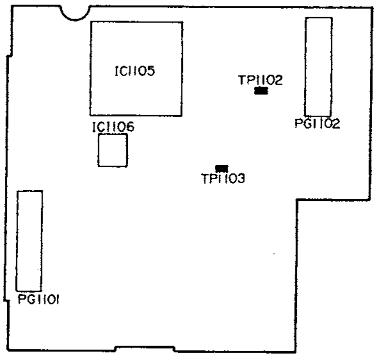

IC1105
TP1102
IC1106
PG1102
TP1103
PG1101

Fig. 2-3 Process Circuit Board [Side-A]

2-7. ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE CAMERA BLOCK

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are replaced.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Caution : When EEP ROM or the process circuit board is replaced, initialize the EEP ROM, referring to "2-8-3 Initial Setting by Model", then perform all the digital adjustments.

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		SENSOR C.B.A	PROCESS C.B.A	AUTO FOCUS	IC1001	IC1002	IC1004	IC1101
CAMERA ANALOGUE AND ERECTRIC VARIABLE RESISTOR ADJUSTMENT								
(1)	Sub Carrier Frequency Confirmation/ Adjustment		●					
(2)	VCO Lock Voltage Confirmation/ Adjustment		●					
(3)	Sensor VCO Lock Voltage Confirmation/Adjustment	●			●		●	
(4)	Sensor Drive Pulse and Sub Voltage Confirmation/Adjustment	●			●			
(5)	Hall Gain Adjustment	●			●			
CAMERA DIGITAL ADJUSTMENT								
(1)	Auto Iris Control Adjustment	●	●		●	●		●
(2)	Iris Calibration Adjustment	●	●		●	●		●
(3)	Blue Matrix Adjustment	●	●		●	●		●
(4)	White Balance Adjustment	●	●		●	●		●
(5)	Chroma Gain Adjustment	●	●		●	●		●
AUTOFOCUS ADJUSTMENT								

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		IC1103	IC1106					
CAMERA ANALOGUE AND ERECTRIC VARIABLE RESISTOR ADJUSTMENT								
(1)	Sub Carrier Frequency Confirmation/ Adjustment	●						
(2)	VCO Lock Voltage Confirmation/ Adjustment							
(3)	Sensor VCO Lock Voltage Confirmation/Adjustment							
(4)	Sensor Drive Pulse and Sub Voltage Confirmation/Adjustment							
(5)	Hall Gain Adjustment							
CAMERA DIGITAL ADJUSTMENT								
(1)	Auto Iris Control Adjustment		●					
(2)	Iris Calibration Adjustment		●					
(3)	Blue Matrix Adjustment		●					
(4)	White Balance Adjustment		●					
(5)	Chroma Gain Adjustment		●					

2-8. CAMERA DIGITAL AND ELECTRIC VARIABLE RESISTOR ADJUSTMENT

Note 1: The digital adjustment program for camera is called the MAP (Manual Adjustment Program).

Note 2: To complete adjustment, press the `ESC` (escape) key twice to restore the MS-DOS screen and then turn off the camera recorder and jigs.

2-8-1. Connections for Adjustment

Connect the camera/recorder, DSP jig, personal computer, power supply, etc. as shown in Fig. 1-1.

Note 1: Check that the camera/recorder is turned on.

2-8-2. How to Start the Adjustment Program (MAP)

Note 1: The following describes an example of the instructions of the personal computer and the menu display; they are different depending on the personal computer manufacturer and model.
Refer to the instruction manual of personal computer.

1) Turn the personal computer on and start the MS-DOS system. (Fig. 2-11)

Note 2: Refer to the instruction manual of the personal computer for how to start the computer.

2) Load the camera adjustment floppy disk into disk drive B and press `B` `:` then `ENTER`. (B may be small letter.) (Fig. 2-12)

Note 3: If the camera adjustment floppy disk is loaded into disk drive A, press `A` `:` then `ENTER`.

3) Press `M` `A` `P` `_` `I` `B` `M` `(SPACE)` `1` then `ENTER` (MAP and IBM may be small letters).
The digital adjustment program (MAP: Manual Adjustment Program) starts and the MODEL SELECT shown Fig. 2-12 appears.

Note 4: When you use a personal computer with two serial interface connectors and connect the DSP jig to serial interface connector 2, press MAP_IBM 2.

4) Select the number accodding to the model.
If `ESC` (escape) is pressed, the display before the MAP starts (MS-DOS) is restored.

Note 5: If you apecify the wrong model, press `ESC` (escape) to restore the MODEL SELECT display, then specify the correct model.

Note 6: If you select number without a model name by mistake, the message shown in Fig. 2-16 will appear in the computer's display. Press any key to return the display to Fig. 2-14 (MODEL SELECT).

Note 7: If there are more than 5 models and `P` is pressed, the computer's display changes to the next page.

```
F>
```

Fig. 2-11

↓

LOAD THE CAMERA ADJ. FLOPPY DISK IN TO DISK DRIVE B

↓

Press `B` `:` `ENTER`

↓

```
F>B:
B>
```

Fig. 2-12

↓

Press `M` `A` `P` `_` `I` `B` `M` `(SPACE)` `1` `ENTER`

↓

```
F>B:
B>MAP_IBM 1
```

Fig. 2-13

MODEL SELECT

↓

```
**********************************************
**************** MODEL SELECT ****************
**********************************************

                [1]    XXXXXXXX
                [2]    XXXXXXXX
                [3]    XXXXXXXX
                [4]    XXXXXXXX
                [5]    XXXXXXXX
                [P]    NEXT SELECTION
                [ESC]  END

       Please select the type of the set.
         Hit [1] - [5] or [P] or [ESC]
```

Fig. 2-14

↓

Press numeral key

↓

Refer to “2-8-3. Initial Setting by Model” for INITIALIZE EEPROM.

Refer to “2-8-4. Electric Variable Resister Adjustment Procedure”for ELECTRIC VARIABLE RESISTOR.

Refer to “2-8-5. Digital Adjustment Procedure” for ADJUSTMENT.

Refer to “2-8-6. Autofocus Adjustment Procedure” for AUTO FOCUS.

MAIN MENU

```
************************************************
***************** MAIN MENU *******************
************************************************
        [A]    INITIALIZE EEPROM
        [B]    ELECTRIC VARIABLE RESISTOR
        [C]    ADJUSTMENT
        [D]    AUTO FOCUS
        [ESC]  END
   Please select [A] of [B] or [C] or [ESC]
```

Fig. 2-15

MESSAGE WHEN OPERATED BY MISTAKE

```
          Can not find the DATA FILE
            **** HIT ANY KEY ****
```

Fig. 2-16

2-8-3. Initial Setting by Model

Note 1: This item describes how to initialize the EEP ROM. Be sure to perform this item after replacing EEP ROM or the process circuit board. When other components are replaced, normally, it is not necessary to initialize the EEP ROM.
Press ESC (escape) to return the computer’s display to MAIN MENU.

1) Start the MAP, referring to “2-8-2. How to Start the Adjustment Program (MAP)”.

2) Press A to select INITIALIZE. (Figs. 2-17, 2-18)
3) If there are no abnormalities in the camera/recorder, the message shown in Fig. 2-18 is displayed in the computer’s display for a while, and then the message informing you that the initial setting has been completed (shown in Fig. 2-19) is displayed.
4) If the message shown in Fig. 2-19 appears in the computer’s display, press any key. The computer’s display returns to Fig. 2-17 (MAIN MENU).
5) Perform all digital adjustments, referring to “2-8-5. Digital Adjustment Procedure”.

Note 2: If an error message appears in the computer’s display, refer to “2-8-7. Error Messages”. If a key is pressed after the error message appears, the computer’s display returns to the MAIN MENU (Fig. 2-17)

MAIN MENU

```
************************************************
***************** MAIN MENU *******************
************************************************
        [A]    INITIALIZE EEPROM
        [B]    ELECTRIC VARIABLE RESISTOR
        [C]    ADJUSTMENT
        [D]    AUTO FOCUS
        [ESC]  END
   Please select [A] of [B] or [C] or [ESC]
```

Fig. 2-17

↓ Press A ↓

```
            NOW INITIAL SETTING !!
             Please wait a moment
```

Fig. 2-18

↓

```
          COMPLETED INITIAL SETTING !!
            **** HIT ANY KEY ****
```

Fig. 2-19

↓

Press any key to return to Fig. 4-17

ERROR MESSAGE

```
             CAN'T WRITE TO EEPROM
     Check the wiring or change the EEPROM
             **** HIT ANY KEY ****
```

Fig. 2-20

2-8-4. Camera Analogue and Electric Variable Resistor Adjustment

Note 1: Only the item "(3) Sensor VCO Lock Voltage Confirmation/Adjustment"is an analogue adjustment. Apersonal computer is not used.

Note 2: The adjustment values obtained by the electric variable resistor adjustments do not change after the initial setting.

Note 3: be sure to check the values before performing electric variable resistor adjustment, Execute these adjustments only if the values are out of the specifications.

1) Start the MAP, referring to "2-8-2. How to Start the Adjustment Program (MAP)"
2) Press B to select ELETRIC VARIABLE RESISTOR. (Figs. 2-21, 2-22)
3) Select the number of the required adjustment.

Note 4: If ESC (escape) is pressed, the computer's display returns to Fig. 2-21 (MAIN MENU).

Note 5: To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/ recorder and jig.

(1) Subcarrier Frequency Confirmation/Adjustment (Figs. 2-23 - 2-25)

PROPOSE	·To set the subcarrier frequency to the specified value.
INCOMPLETED PHENOMENON	·No colour appears.
TEST POINT	·TP1103 PROCESS ·JK200-9 (GND : Black lead of DSP Output Jig)
EQUIPMENT/JIG	·Frequency Counter
CONDITION	———
PROCEDURE	

1) Press 1 to select the subcarrier frequency. (Fig. 4-24)
2) Connect the frequency counter to TP1103.
3) Press the U and D keys to set the frequency to 17.734475MHz ± 20Hz.
4) Press ERNTER key.
5) Press any key.

MAIN MENU

```
************************************************
***************** MAIN MENU ********************
************************************************

        [A]    INITIALIZE EEPROM
        [B]    ELECTRIC VARIABLE RESISTOR
        [C]    ADJUSTMENT
        [D]    AUTO FOCUS
        [ESC]  END
    Please select [A] of [B] or [C] or [ESC]
```

Fig. 2-21

↓

Press B

ELECTRIC VARIABLE RESISTOR

↓

```
************************************************
********* ELECTRIC VARIABLE RESISTOR **********
************************************************

   [1]    SUBCARRIER FREQUENCY
   [2]    VCO LOCK VOLTAGE
   [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
   [4]    HALL GAIN
   [ESC]  RETURN TO MAIN MENU
        Please select [1] - [4] or [ESC]
```

Fig. 2-22

ELECTRIC VARIABLE RESISTOR

```
************************************************
********* ELECTRIC VARIABLE RESISTOR **********
************************************************

   [1]    SUBCARRIER FREQUENCY
   [2]    VCO LOCK VOLTAGE
   [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
   [4]    HALL GAIN
   [ESC]  RETURN TO MAIN MENU
        Please select [1] - [4] or [ESC]
```

Fig. 2-23

↓

Press 1

↓

```
      SUB CARRIER FREQUENCY CONFIRMATION
 Connect the frequency counter to TP1103
 Confirm that the frequency is
                    17.734475MHz ± 20Hz
         [U]       UP
         [D]       DOWN
         [ENTER]   RETURN TO MENU
```

Fig. 2-24

↓

Press ENTER

↓

```
             COMPLETED ADJUSTMENT
             **** HIT ANY KEY ****
```

Fig. 2-25

↓

Press any key to return to Fig. 2-23.

(2) VCO Lock Voltage Confirmation/Adjustment (Figs. 2-26 - 2-28)

PROPOSE	·To synchronize the horizontal sync signal with the subcarrier frequency.
INCOMPLETED PHENOMENON	·The picture is distorted.
TEST POINT	·TP1102 PROCESS ·JK200-9 (GND : Black lead of DSP Output Jig)
EQUIPMENT/JIG	·DVM
CONDITION	———
PROCEDURE	

1) Press 2 to select the VCO lock voltage. (Fig. 2-26)
2) Connect the DVM to TP1102.
3) Press the U and D keys to set the voltage to 2.2V ± 0.1V.
4) Press ERNTER key.
5) Press any key.

ELECTRIC VARIABLE RESISTOR

```
**********************************************
********* ELECTRIC VARIABLE RESISTOR *********
**********************************************

 [1]    SUBCARRIER FREQUENCY
 [2]    VCO LOCK VOLTAGE
 [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
 [4]    HALL GAIN
 [ESC]  RETURN TO MAIN MENU
     Please select [1] - [4] or [ESC]
```

Fig. 2-26

↓

Press 2

↓

```
              VCO LOCK VOLTAGE
        Connect the DVM to TP1102.
   Confirm that the voltage is 2.2V ± 0.1V
         [U]       UP
         [D]       DOWN
         [ENTER]   RETURN TO MENU
```

Fig. 2-27

↓

Press ENTER

↓

```
           COMPLETED ADJUSTMENT
           **** HIT ANY KEY ****
```

Fig. 2-28

↓

Press any key to return to Fig. 2-26.

(3) Sensor VCO Lock Voltage Confirmation/Adjustment

Note: Only this item is an analogue adjustment which does not use a personal computer.

TEST POINT	·TP1001 SENOR ·JK200-9 (GND : Black lead of DSP Output Jig)
ADJUST	·CT1001 SENSOR
EQUIPMENT/JIG	·DVM
CONDITION	———
PROCEDURE	

1) Connect the DVM to TP1001.
2) Adjust CT1001 for 2.7V ± 0.1V.

A PERSONAL COMPUTER IS NOT USED FOR THIS ADJUSTMENT.

(4) Sensor Drive Pulse and Sub Voltage Confirmation/Adjustment (Figs. 2-29 - 2-32)

PROPOSE	•To synchronize the sensor drive frequency with the horizontal sync signal. •To suppress blooming.
INCOMPLETED PHENOMENON	•The picture is distorted. •When a very bright subject is spot, a band of light (blooming occurs at the top and bottom of the subject.
TEST POINT	•TP1002 PROCESS •JK200-9 (GND : Black lead of DSP Output Jig)
EQUIPMENT/JIG	•DVM
CONDITION	――――
PROCEDURE	

1) Press 3 to select the sensor drive pulse and sub voltage. (Fig. 2-29)
2) Check the number in the seal at the back of IC1001 (SENSOR) and enter the number into the personal computer.
3) Press ERNTER key.
4) The specified voltage is displayed in the XXX section of the display in Fig. 2-31.
5) Connect the DVM to TP1002.
6) Press the U and D keys adjust the voltage to the specified one displayed in step 4).
7) Press ERNTER key.
8) Press any key.

ELECTRIC VARIABLE RESISTOR

```
**************************************************
********** ELECTRIC VARIABLE RESISTOR **********
**************************************************
  [1]    SUBCARRIER FREQUENCY
  [2]    VCO LOCK VOLTAGE
  [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
  [4]    HALL GAIN
  [ESC]  RETURN TO MAIN MENU
       Please select [1] - [4] or [ESC]
```

Fig. 2-29

↓

Press 3

↓

```
  SENSOR SUB VOLTAGE AND
     DRIVE PULSE FREQUENCY CONFIRMATION

  PLEASE INPUT SENSOR'S SEAL OF
                 NUMBER FROM KEYBOARD=>
```

Fig. 2-30

↓

```
        SENSOR SUB VOLTAGE ADJUSTMENT
     ┌──────────────────────────────────┐
     │     Connect the DVM to TP1002.   │
     │ Confirm that the voltage is XXX V│
     └──────────────────────────────────┘
          [U]       UP
          [D]       DOWN
          [ENTER]   RETURN TO MENU
```

Fig. 2-31

↓

Press ENTER

↓

```
          COMPLETED ADJUSTMENT
          **** HIT ANY KEY ****
```

Fig. 2-32

↓

Press any key to return to Fig. 2-29.

(5) Hall Gain Adjustment (Figs. 2-33 - 2-35)

Note: This adjustment is performed automatically. When the Hall Gain Adjustment is specified, the personal computer adjusts it automatically

TEST POINT	――――
EQUIPMENT/JIG	――――
CONDITION	――――
PROCEDURE	

1) Press 4 to select the hall gain. (Fig. 2-33)
2) After several seconds, the display will change from Fig. 2-34 to Fig. 2-35.
3) Press ERNTER key.
4) Press any key.

ELECTRIC VARIABLE RESISTOR

```
**************************************************
********** ELECTRIC VARIABLE RESISTOR **********
**************************************************
  [1]    SUBCARRIER FREQUENCY
  [2]    VCO LOCK VOLTAGE
  [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
  [4]    HALL GAIN
  [ESC]  RETURN TO MAIN MENU
       Please select [1] - [4] or [ESC]
```

Fig. 2-33

↓

Press 4

↓

```
            HALL GAIN ADJUSTING
```

Fig. 2-34

↓

```
          COMPLETED ADJUSTMENT
          **** HIT ANY KEY ****
```

Fig. 2-35

↓

Press any key to return to Fig. 2-33.

2-8-5. Digital Adjustment Procedure

Note 1: When EEP ROM or the process circuit board is replaced, initialize the EEP ROM, referring to "2-8-3. Initial Setting By Model" then perform all the digital adjustments.

Note 2: When an error message appears during adjustment, refer to "2-8-7. Error Messages". If a key is pressed after an error message appears, the ADJUSTMENT MENU is restored.

1) Start the MAP, referring to "2-8-2. How to Start the Adjustment Program (MAP)"
2) Press C to select ADJUSTMENT. (Figs. 2-36, 2-37)
3) Select the number of the required adjustment.

Note 3: If ESC (escape) is pressed, the computer's display returns to Fig. 2-36 (MAIN MENU).

Note 4: To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

(1) Auto Iris Control Adjustment (Figs. 2-38 - 2-42)

Note: This adjustment is performed automatically, When the auto iris control adjustment is specified, the personal computer adjusts it automatically.

PROPOSE	·To set the brightness of picture.
INCOMPLETED PHENOMENON	·A black subject with low illumination is raised. ·A black subject with low illumination is depressed.
EQUIPMENT/JIG	(Oscilloscope)
CONDITION	Point at a light box without a chart inserted.
PROCEDURE	

1) Press 1 to select the auto iris control adjustment. (Fig. 2-39)
2) If there is no abnormality in the camera/recorder, the message shown in Fig. 2-40 is displayed in the computer's display for a while, and then message shown in Fig. 2-41 appears.
3) After the computer's display changes from Fig. 2-41 to Fig. 2-42, press any key to return the display to Fig. 2-39.
   Now, the auto iris control adjustment is complete.

Check: Connect an oscilloscope to the video output (AV OUT) and check that the waveform level is 514mV ± 70mV. (Fig. 2-38)

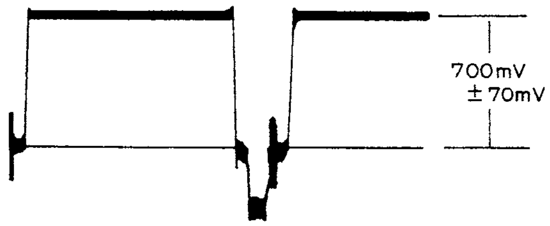


Fig. 2-38

MAIN MENU

```
************************************************
***************** MAIN MENU ******************
************************************************

         [A]    INITIALIZE EEPROM
         [B]    ELECTRIC VARIABLE RESISTOR
         [C]    ADJUSTMENT
         [D]    AUTO FOCUS
         [ESC]  END

    Please select [A] of [B] or [C] or [ESC]
```

Fig. 2-36

Press C

ADJUSTMENT MENU

```
************************************************
***************** ADJUSTMENT *****************
************************************************

             [1]      AUTO IRIS CONTROL
             [2]      IRIS CALIBRATION
             [3]      BLUE MATRIX
             [4]      WHITE BALANCE
             [5]      CHROMA GAIN
             [ESC]    RETURN TO MAIN MENU

     Please  select  [1]  -  [5]  or  [ESC]
```

Fig. 2-37

ADJUSTMENT MENU

```
************************************************
***************** ADJUSTMENT *****************
************************************************

             [1]      AUTO IRIS CONTROL
             [2]      IRIS CALIBRATION
             [3]      BLUE MATRIX
             [4]      WHITE BALANCE
             [5]      CHROMA GAIN
             [ESC]    RETURN TO MAIN MENU

        Please select [1] - [5] or [ESC]
```

Fig. 2-39

Press 1

```
           AUTO IRIS CONTROL ADJUSTING

               Please wait a moment
```

Fig. 2-40

```
         VIDEO LEVEL DATA WRITING TO EEPROM
```

Fig. 2-41

```
             COMPLETED WRITING EEPROM

              **** HIT ANY KEY ****
```

Fig. 2-42

Press any key to returns to ADJUSTMENT MENU (Fig. 2-39)

(2) Iris Calibration Adjustment (Figs. 2-43 - 2-46)

Note: This adjustment is performed automatically. When the Iris Calibration Adjustment is specified, the personal computer adjusts it automatically

PROPOSE	To detect the F number correctly.
INCOMPLETED PHENOMENON	·The iris operation becomes unstable. ·AGC, program AE and Auto white does not operate normally.
EQUIPMENT/JIG	————
CONDITION	·Attach a C12 filter. ·Point the camera at the light box without a chart to fill the screen (at wide-angle).
PROCEDURE	

1) Press $\boxed{2}$ to select the iris calibration adjustment. (Fig. 2-43)
2) If there is no abnormality in the camera/recorder, the message shown in Figs. 2-44 and 2-45 are displayed in the computer's display for a while, and then the message shown in Fig. 2-46 appears.
3) Now, the iris calibration adjustment is complete. Press any key to return the computer's display to Fig. 2-43.

(3) Blue Matrix Adjustment (Figs. 2-47 - 2-52)

PROPOSE	To compensate for uneveness in the chroma signal.
INCOMPLETED PHENOMENON	Color reproduction becomes defective.
EQUIPMENT/JIG	Oscilloscope
CONDITION	Point at a color bar chart.
PROCEDURE	

1) Press $\boxed{3}$ to select the blue matrix adjustment. (Fig. 2-48)
2) Connect an oscilloscope to the video output (AV OUT).
3) Press the $\boxed{D}$ key to minimize the yellow amplitude, and then press the $\boxed{U}$ key to adjust the yellow amplitude so its relation to the blue amplitude is 1:9.
4) Press the $\boxed{ENTER}$ key to write data to EEP ROM and then press any key to return the computer's display to Fig. 2-48.

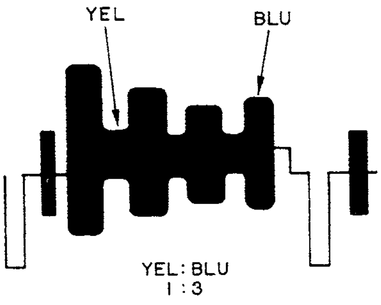


Fig. 2-47

ADJUSTMENT MENU

```
***********************************************
***************** ADJUSTMENT ******************
***********************************************

          [1]      AUTO IRIS CONTROL
          [2]      IRIS CALIBRATION
          [3]      BLUE MATRIX
          [4]      WHITE BALANCE
          [5]      CHROMA GAIN
          [ESC]    RETURN TO MAIN MENU

      Please select [1] - [5] or [ESC]
```

Fig. 2-43

↓

Press $\boxed{2}$

↓

```
          IRIS CALIBRATION ADJUSTING
             Please wait a moment
```

Fig. 2-44

↓

```
        HALL DATA WRITING TO EEPROM
```

Fig. 2-45

↓

```
          COMPLETED WRITING EEPROM
             **** HIT ANY KEY ****
```

Fig. 2-46

↓

Press any key to return to ADJUSTMENT MENU. (Fig. 2-43)

ADJUSTMENT MENU

```
***********************************************
***************** ADJUSTMENT ******************
***********************************************

          [1]      AUTO IRIS CONTROL
          [2]      IRIS CALIBRATION
          [3]      BLUE MATRIX
          [4]      WHITE BALANCE
          [5]      CHROMA GAIN
          [ESC]    RETURN TO MAIN MENU

      Please select [1] - [5] or [ESC]
```

Fig. 2-48

↓

Press $\boxed{3}$

↓

```
        BLUE MATRIX ADJUST MODE SETTING
             Please wait a moment
```

Fig. 2-49

↓

```
           BLUE MATRIX ADJUSTMENT
          [U]        UP
          [D]        DOWN
          [ENTER]    RETURN TO MENU
```

Fig. 2-50

↓

Press $\boxed{ENTER}$

↓

```
      BLUE MATRIX DATA WRITING TO EEPROM
```

Fig. 2-51

↓

```
          COMPLETED WRITING EEPROM
             **** HIT ANY KEY ****
```

Fig. 2-52

↓

Press any key to return to ADJUSTMENT MENU (Fig. 2-48)

(4) White Balance Adjustment (Figs. 2-53 - 2-59)

PROPOSE	To set white balance under the color temperature which becomes a reference for the auto white balance circuit.
INCOMPLETED PHENOMENON	·Color of the subject is different from that of the picture. ·A white subject is not seen as white.
EQUIPMENT/JIG	·Oscilloscope (Vectorscope)
CONDITION	·Attach a C12 filter. ·Point at a gray scale chart.
PROCEDURE	

1) Press 4 to select the white balance adjustment. (Fig. 2-55)

When using an oscilloscope (Fig. 2-53)

2) Connect an oscilloscope to the video output (AV OUT).
3) Press the U, D, L and R keys to minimize carrier components in the waveform. (Fig. 2-57)
4) After minimizing the carrier components, press the U key 10 times.
5) Press the ENTER key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-55.

When using a vectorscope (Fig. 2-54)

2) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
3) Press the U, D, L and R keys so the bright spot comes to the center of the vectorscope. (Fig. 2-57)
4) After centering the bright spot, press the U key 10 times.
5) Press the ENTER key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-55.

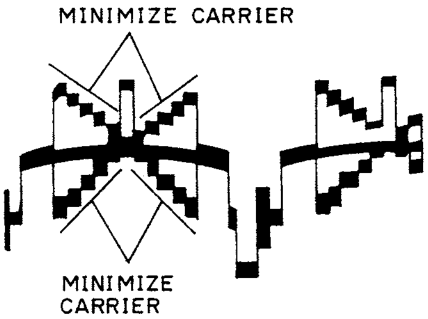


Fig. 2-53

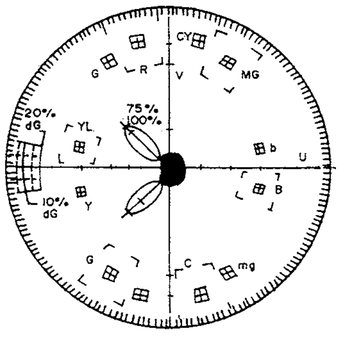


Fig. 2-54

ELECTRIC VARIABLE RESISTOR

```
************************************************
********* ELECTRIC VARIABLE RESISTOR **********
************************************************
  [1]    SUBCARRIER FREQUENCY
  [2]    VCO LOCK VOLTAGE
  [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
  [4]    HALL GAIN
  [ESC]  RETURN TO MAIN MENU
       Please select [1] - [4] or [ESC]
```

Fig. 2-55

↓

Press 4

↓

```
        WHITE BALANCE ADJUST MODE SETTING
              Please wait a moment
```

Fig. 2-56

↓

```
            WHITE BALANCE ADJUSTMENT
            [U]       RED-GAIN UP
            [D]       RED-GAIN DOWN
            [R]       BLUE-GAIN UP
            [L]       BLUE-GAIN DOWN
            [ENTER]   RETURN TO MENU
```

Fig. 2-57

↓

Press ENTER

↓

```
      WHITE BALANCE DATA WRITING TO EEPROM
```

Fig. 2-58

↓

```
            COMPLETED WRITING EEPROM
              **** HIT ANY KEY ****
```

Fig. 2-59

↓

Press any key to return to ADJUSTMENT MENU (Fig. 2-55)

(5) Chroma Gain Adjustment (Figs. 2-60 - 2-66)

PROPOSE	To set the color saturation under the reference color temperature.
INCOMPLETED PHENOMENON	·Color of the picture is denser than that of the subject. ·Color of the picture is lighter than that of the subject.
EQUIPMENT/JIG	·Oscilloscope (Vectorscope)
CONDITION	·Attach a C12 filter. ·Point at a color bar chart.
PROCEDURE	

1) Press 5 to select the chroma gain adjustment. (Fig. 2-62)

When using an oscilloscope (Fig. 2-60)

2) Connect an oscilloscope to the video output (AV OUT).
3) Press the U and D keys to set the red level to 440mV ± 30mV. (Figs. 2-60, 2-64)
4) Press the ENTER key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-62.

When using a vectorscope (Fig. 2-61)

2) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
3) Press the U and D keys so the red vector is 155% ± 10% of the burst level. (Figs. 2-61, 2-64)
4) Press the ENTER key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-62.

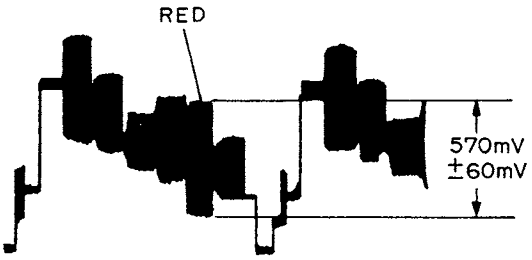


Fig. 2-60

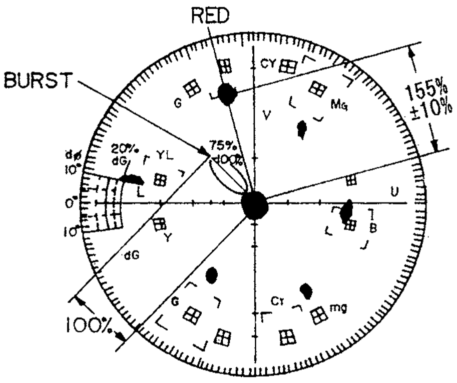


Fig. 2-61

ELECTRIC VARIABLE RESISTOR

```
*********************************************
********* ELECTRIC VARIABLE RESISTOR *********
*********************************************

 [1]    SUBCARRIER FREQUENCY
 [2]    VCO LOCK VOLTAGE
 [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
 [4]    HALL GAIN
 [ESC]  RETURN TO MAIN MENU
      Please select [1] - [4] or [ESC]
```

Fig. 2-62

Press 5

```
     CHROMA GAIN ADJUST MODE SETTING
         Please wait a moment
```

Fig. 2-63

```
        CHROMA GAIN ADJUSTMENT
        [U]      UP
        [D]      DOWN
        [ENTER]  RETURN TO MENU
```

Fig. 2-64

Press ENTER

```
   CHROMA GAIN DATA WRITING TO EEPROM
```

Fig. 2-65

```
       COMPLETED WRITING EEPROM
         **** HIT ANY KEY ****
```

Fig. 2-66

Press any key to return to ADJUSTMENT MENU (Fig. 2-62)

2-8-6. Autofocus Adjustment

Refer to SUPPLEMENT for autofocus adjustment

2-8-7. Error Messages

When an error message is displayed during adjustment, press any key to return the computer's display to the initial setting or adjustment menu and then investigate the cause of the error.

(1) Error Message No. 1

```
ERROR !!
CAN'T WRITE TO EEPROM
Check the wiring or change the EEPROM
**** HIT ANY KEY ****
```

Fig. 2-101

(1) Error message displayed when EEP ROM is initialized and during whole adjustment.

Major Causes
1. EEP ROM is faulty.
2. DSP μP is faulty.
3. Data line between DSP μP and EEP ROM is faulty.
4. DSP jig is faulty.

(2) Error Message No. 2

```
ERROR !!

BAD LIGHT CONDITION !

**** HIT ANY KEY ****
```

Fig. 2-102

(2) Error massage displayed during auto iris control and iris calibration adjustments.

Countermeasures
1. Check that the brightness (also the color temperature) of the light box dose not decrease.
2. Adjust the number of color temperature conversion filters.

(3) Error Message No. 3

```
ERROR !!

IRIS HALL DEVICE BE DEFECTIVE

**** HIT ANY KEY ****
```

Fig. 2-103

(3) Error message displayed during auto iris control and iris calibration adjustments.

Major Causes
1. The connection of the iris block is faulty.
2. Iris block (Hall device) is faulty.

(4) Error Message No. 4

```
ERROR !!

MAY BE DEVICE ON THE SET IS BROKEN

**** HIT ANY KEY ****
```

Fig. 2-104

(4) Error message displayed during auto iris control and iris calibration adjustments.

Major Causes
1. Data line is faulty.
2. The video signal processor (including the VCR block) is faulty.
3. DSP jig is faulty.
4. Adjustment program (MAP) is faulty.

(5) Error Message No. 5

```
ERROR !!
CAN'T FIND THE DATA FILE
PLEASE CONFIRM THE DATA FILE
**** HIT ANY KEY ****
```

Fig. 2-105

(5) Error message displayed when there is an abnormality in the data file for each model.

Major Causes
1. The wrong madel has been specified in the first step.

2-9. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

(1) Deflection Yoke Position Adjustment (Fig. 2-151)

PURPOSE	This adjustment procedure eliminates picture tilt in the EVF display.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·DEFLECTION YOKE	

1) Loosen the deflection yoke nut.
2) Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

Note: After adjustment is completed, tighten the deflection yoke nut.

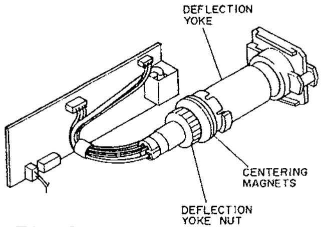


Fig.2-151

(2) EVF Centering Adjustment (Fig. 2-151)

PURPOSE	This adjustment centers the image observed by the camera in the EVF display.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·CENTERING MAGNETS	

1) Remove the locking paint from the centering magnet.
2) Adjust the centering magnets until the center of the picture viewed by the camera is positioned in the center of the EVF display.

(3) EVF Vertical Size Adjustment (Fig. 2-152)

PURPOSE	This adjustment determines the vertical size of the image appearing in the EVF display			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·RT2003 EVF (V.SIZE)	

1) Adjust RT2003 so that the top and bottom edges of the chart match the top and bottom edges of the CRT.

(4) EVF Brightness Adjustment (Fig. 2-152)

PURPOSE	This adjustment sets the brightness of the picture in the EVF display.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·RT2002 EVF (BRIGHT)	

1) Adjust RT2002 to optimize the EVF picture.

(5) EVF Focus Adjustment (Fig. 2-152)

PURPOSE	This control adjusts for optimum focus of the electronic viewfinder picture.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·EVF Display		·Aim the resolution chart.	·RT2001 EVF (FOCUS)	

1) Adjust RT2001 so that the EVF picture is clear.

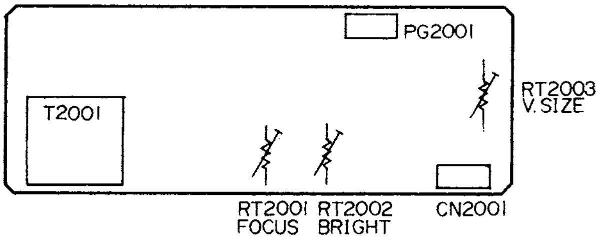


Fig. 2-152 Electrical Adjustment (EVF) Circuit Board [Parts Side]

3. VTR SECTION ADJUSTMENT

3-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITION

Adjustments other than " Power Shut Off Level Adjustment" can be done with the unassembled VTR block.

1. Main Circuit Board
2. IR/LED Circuit Board
3. Operation Swicth Unit

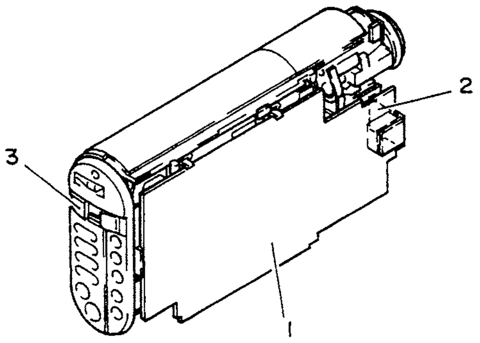


Fig. 3-1

3-2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

- Test Equipment
  Oscilloscope (dual trace)
  Digital Voltmeter (DVM)
  Frequency Counter
  Millivoltmeter
  Colour Video Monitor
  Colour Bar Chart
  Light Box (3100° K)
  C/R Oscillator
- Alignment Tape, etc.
  Alignment Tape (20HSC-3)
  Blank Tape
  ATF-R Jig
  DC Power Supply (DC 0~7V/3A)
  DC Power Supply (DC 5V/1A)

3-3. ADJUSTMENT CONDITION

1) Check that the camera section has been adjusted correctly before adjusting the VTR section
2) Connect this unit, a power supply and a colour video monitor as shown in Fig. 1-1.
3) Use the 10:1 probe of the oscilloscope when other not specified.
4) When "Record mode" is specified load a blank tape and set the 8mm video camera/recorder to the record mode by the following procedure.
   ① Set the POWER switch to CAMERA position.
   ② Press the REC START/STOP button on the set (or REC START/STOP button on the remote control).
5) before adjusting the resistors marked with asterisks in the following text, remove the corresponding laser trimming resistors to replace them with the specified semi-variable resistors.
6) Befor unsoldering laser triminng resistors besure to confirm each adjustment value. Remove only the resistors used in the adjustment items that should be adjusted.

3-4. PRESET POSITION OF SWITCHES AND CONTROLS DURING ADJUSTMENT

• CAMERA/OFF/VIDEO switch	"VIDEO" position
• TITLE	Not Display mode
• Hi-8 switch	AUTO position

3-5. ADJUSTMENT COMPONENTS LOCATIONS

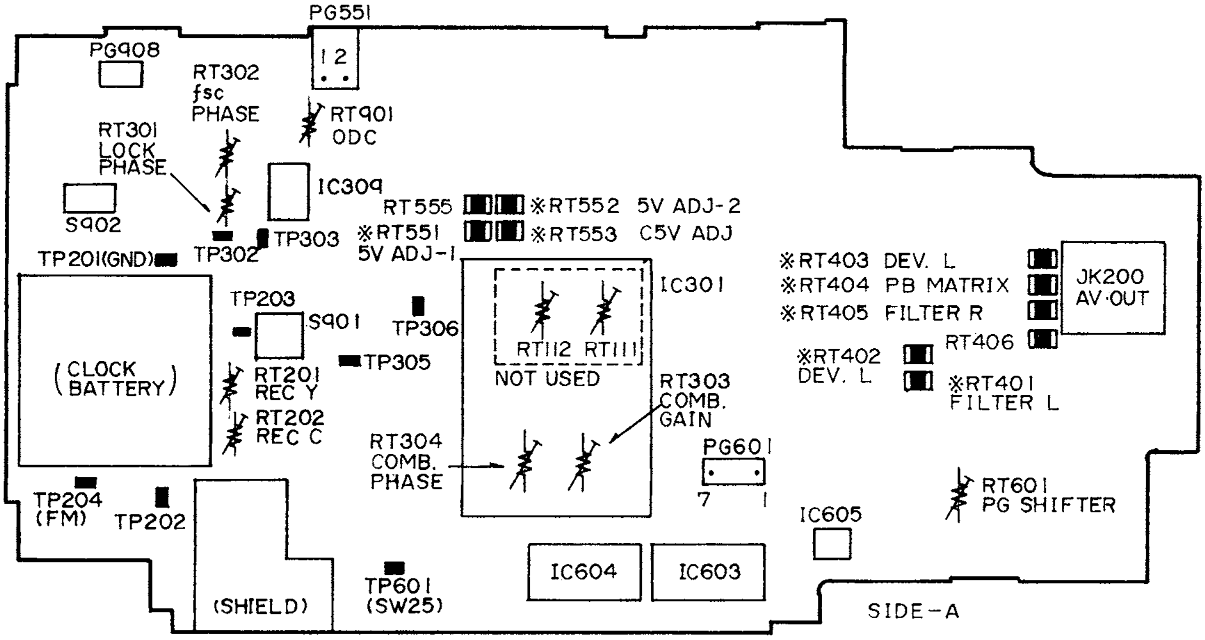

PG551
1 2
PG908
RT302
fsc
PHASE
RT901
ODC
RT301
LOCK
PHASE
IC309
S902
RT555
※RT552 5V ADJ-2
※RT551
5V ADJ-1
※RT553 C5V ADJ
TP303
TP201(GND)
TP302
※RT403 DEV. L
※RT404 PB MATRIX
※RT405 FILTER R
JK200
AV·OUT
IC301
TP203
S901
TP306
RT112 RT111
NOT USED
RT406
※RT402
DEV. L
※RT401
FILTER L
TP305
(CLOCK BATTERY)
RT201
REC Y
RT202
REC C
RT303
COMB.
GAIN
RT304
COMB.
PHASE
PG601
7 1
RT601
PG SHIFTER
TP204
(FM)
TP202
IC605
TP601
(SW25)
IC604
IC603
(SHIELD)
SIDE-A

Fig. 3-2 Main (MAIN) Circuit Board

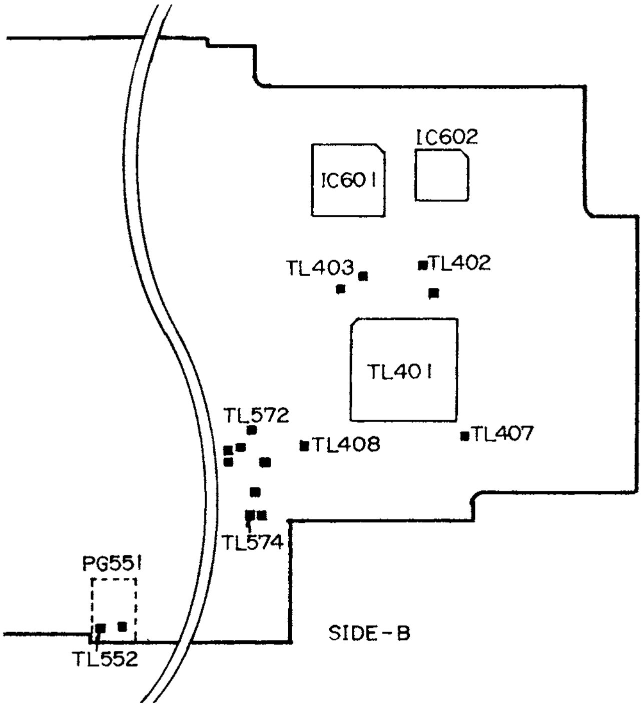
Note 1 : Before adjusting the resistors marked with asterisks shown in the adjustment parts location diagram, remove the laser trimming resistors to replace them with semi-variable resistors (shown in Table 3-1).

Note 2 : Before soldering semi-variable resistors. insulate their terminals shown in Fig. 3-3.

Note 3 : Adjust (turn) the soldered semi-variable resistor within the range shown in Fig. 3-3.

Table 3-1

ADJUST POINT	SEMI-VARIABLE RESISTOR (Ω)	C.B.A	NAME OF ADJUSTMENT
RT401	22 k	MAIN	FILTER L
RT402	47 k	MAIN	DEV. L
RT403	47 k	MAIN	DEV. R
RT404	47 k	MAIN	PB MATRIX
RT405	22 k	MAIN	FILTER R
RT551	22 k	MAIN	5V ADJ-1
RT552	22 k	MAIN	5V ADJ-2
RT553	47 k	MAIN	C5V ADJ


IC602
IC601
TL403
TL402
TL401
TL572
TL408
TL407
TL574
PG551
TL552
SIDE-B

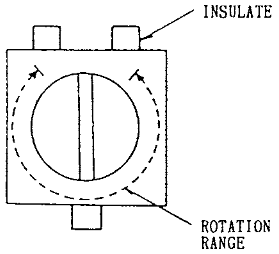

INSULATE
ROTATION
RANGE

Fig. 3-3

3-6. ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE VTR BLOCK

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are placed.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Note: After replacing the parts, check each adjustment. If you find the items necessary to be adjusted, remove the corresponding laser trimming resistors and replace them with variable resistors for adjustment.

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		MAIN C.B.A	CYLINDER	IC901	IC601 IC602	IC201 IC202	IC301	IC306 IC308
	SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT							
(1)	Power Shut Off Level Adjustment	●		●	●			
(2)	Head Switch Point Adjustment	●	●	●	●			
	LUMINANCE/CHROMA CIRCUIT ADJUSTMENT							
(1)	Record Luminance/Chroma Signal Adjustment	●	●			●	●	●
(2)	Luminance/Chroma Separate Adjustment	●	●			●	●	●
(3)	Colour Alignment Adjustment	●						●
	AUDIO CIRCUIT ADJUSTMENT							
(1)	Band Pass Filter (BPF) Adjustment							
(2)	Deviation Adjustment							
(3)	Playback Matrix Adjustment							
	DC-DC CONVERTER ADJUSTMENT							
(1)	Output Voltage Adjustment							

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		IC309	IC401	IC551				
	SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT							
(1)	Power Shut Off Level Adjustment							
(2)	Head Switch Point Adjustment							
	LUMINANCE/CHROMA CIRCUIT ADJUSTMENT							
(1)	Record Luminance/Chroma Signal Adjustment	●						
(2)	Luminance/Chroma Separate Adjustment	●						
(3)	Colour Alignment Adjustment	●						
	AUDIO CIRCUIT ADJUSTMENT							
(1)	Band Pass Filter (BPF) Adjustment		●					
(2)	Deviation Adjustment		●					
(3)	Playback Matrix Adjustment		●					
	DC-DC CONVERTER ADJUSTMENT							
(1)	Output Voltage Adjustment			●				

3-7. SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT

(1) Power Shot Off Level Adjustment (Figs. 3-2, 3-4)

Note 1: Perform this adjustment after replacing the main circuit board (system control microprocessor).
Note 2: Be sure to connect the camera block and EVF for this adjustment.

PURPOSE	• To set the minimum voltage required to operate the camera/recorder.
INCOMPLETED PHENOMENON	• The usable time of the battery becomes short. • The camera/recorder deos not operate normally.

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•DC Power Supply (0 ~ 7V) •DVM •ATF-R Jig (SW3 : ON)	•PG551-2 MAIN •PG551-1 (GND) MAIN •PG601 MAIN	•Connect the DC power supply to PG551-2. •Connect the DVM to PG551-2. •Connect the ATF-R jig to PG601.	•RT901 (ODC) MAIN	5.6V ± 0.01Vで 図3-4の表示にする

1) After connecting the ATF-R jig, connect the DC power supply.
2) Adjust the voltage control of the DC power supply so the voltage at PG551-2 is 5.6V ± 0.01V.
3) Adjust RT901 so the same battery level indication as in Fig. 3-4 appears on the monitor screen.

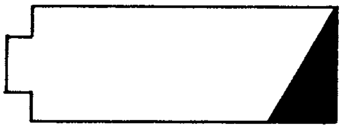


Fig. 3-4

(2) Head Switching Point Adjustment (Figs. 3-2, 3-5)

Note: Be sure to perform this adjustment after replacing the cylinder assembly and main circuit board.

PURPOSE	• To set the switching point of the video heads during playback.
INCOMPLETED PHENOMENON	• Vertical jitter occurs. • Switching noise appears across the bottom of the monitor screen.

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Osillosope •Alignment Tape •ATF-R Jig (SW3:OFF)	•Video Out (A/V OUT) •TP1 (SW25) ATF-R •TP2 (GND) ATF-R	•Playback the alignment tape. •Connect the ATF-R jig to PG601.	•RT601 MAIN (PG SHIFT)	7H ± 0.5H

1) Connect the oscilloscope to video out.
2) Connect the oscilloscope to TP1 (SW25).
3) Trigger the oscilloscope at SW25Hz.
4) Set the oscilloscope to the (-) slope.
5) Adjust that the trailing edge of the SW25Hz signal is 7H ± 0.5H (horizontal) line before the start of channel-1 vertical sync.
6) Set the oscilloscope to the (+) slope and confirm that the leading edge of the SW25Hz signal is 6H ± 1.5H (horizontal) line before the start of channel-2 vertical sync.

Note: The waveform of channel-1 and channel-2 video signals in the diagram may be opposite depending on the alignment tape.

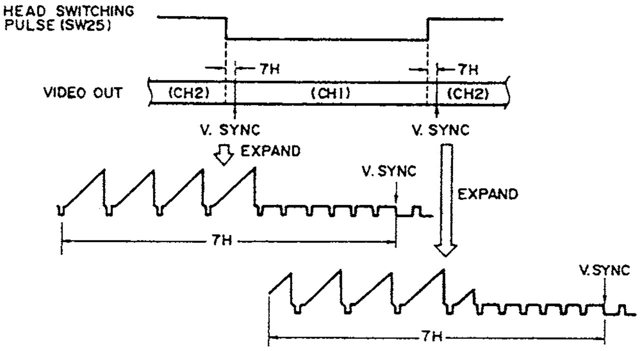


Fig. 3-5

3-8. LUMINANCE/CHROMA CIRCUIT ADJUSTMENT

(1) Record Luminance/Chroma Level Adjustment (Figs. 3-2, 3-6, 3-7)

Note: Be sure to perform this adjustment after replacing the cylinder.

PURPOSE	• To set the luminance and chroma signals to the specified values.			
INCOMPLETED PHENOMENON	• The luminance and chroma S/Ns diteriorate. • Cross-beats appear on the monitor screen. • Black and white are inverted in picture.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Osillosope •Colour bar chart •ATF-R Jig (SW3:ON)	•TP202 (REC Y) MAIN •TP203 (REC C) MAIN •TP201 (GND) MAIN •Video Out (A/V OUT)	•Aim the camera at the colour bar chart. •Connect the ATF-R jig to PG601. •Hi-8 switch : AUTO	•RT201 MAIN (REC LUMA LEVEL) •RT202 MAIN (REC CHROMA LEVEL)	•200mV ± 5mVp-p •210mV ± 5mVp-p

1) Connect the ATF-R jig to PG601 and turn the power off.
2) Press the STOP button on the operation switch unit and hold it, then supply power.
3) Connect the oscilloscope to TP201.
4) Trigger the oscilloscope at video signal.
5) Adjust RT201 so that the record luminance signal is 200mV ± 5mVp-p. (Fig. 3-6)
6) Set the Hi-8 switch to NORMAL position.
7) Connect the oscilloscope to TP203.
8) Adjust RT202 so that the record chroma signal is 210mV ± 5mVp-p. (Fig. 3-7)

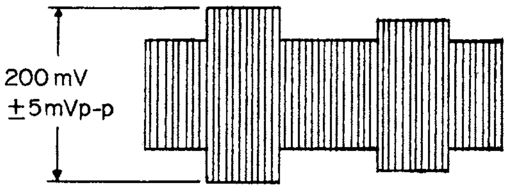


Fig. 3-6

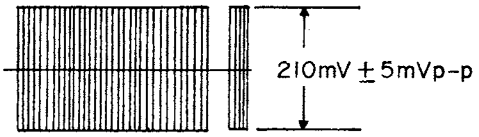


Fig. 3-7

(2) Luminance/Chroma Separate Adjustment (Figs. 3-2, 3-8)

PURPOSE	• To separate the luminance and chroma signals.			
INCOMPLETED PHENOMENON	• The luminance S/N deteriorates.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Osillosope •Colour bar chart	•TP305 MAIN •TP201 (GND) MAIN •Video Out (A/V OUT)	•Aim the camera at the colour bar chart. •STOP mode •Hi-8 switch : AUTO	•RT304 MAIN (COMB. PHASE) •RT303 MAIN (COMB. GAIN)	Minimize the burst signal

1) Connect the oscilloscope to TP305.
2) Trigger the oscillosccope at video signal.
3) Adjust RT303 and RT304 so that the burst level is minimize.

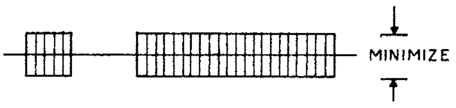


Fig. 3-8

(3) Colour Alignment Adjustment (Figs. 3-2, 3-9)

PURPOSE	•To set the tint in the colour alignment circuit.			
INCOMPLETED PHENOMENON	•No colour appears during trick play or colour reproduction becomes defective.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Vectorscope •Alignment Tape	•TP302 MAIN •TP303 MAIN •Video Out (A/V OUT) •TP201 (GND) MAIN	•Playback the alignment tape.	•RT301 MAIN (LOCK PHASE) •RT302 MAIN (fsc PHASE)	•

1) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
2) Supply the power (5V DC) to TP303 via a 1kΩ resistor.
3) Adjust RT301 so the YL chroma phase is aligned (± 10deg) when 5V DC is applied to TP302 via a 1kΩ resistor and when TP302 is not connected (open).
4) Connect TP303 to ground via a 1kΩ resistor.
5) Adjust RT302 so the YL chroma phase is aligned (± 10deg) when 5V DC is applied to TP302 via a 1kΩ resistor and when TP302 is not connected (open).
6) Perform step 2) - 5) again.

Note: RT301 and RT302 can be adjusted only when 5V DC is applied TP302 via a 1kΩ resistor.

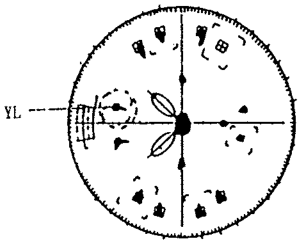


Fig. 3-9

3-9. AUDIO CIRCUIT ADJUSTMENT

Note: Before adjusting the audio circuits, prepare a tape on which 1kHz, -7.8 ± 3dB audio signals are recorded on the L and R channels (referred to as the audio tape hereafter).

(1) Band Pass Filter (BPF) Adjustment (Figs. 3-2, 3-10, 3-11)

PURPOSE	• To set the bandpass frequency of the BPF.			
INCOMPLETED PHENOMENON	• No audio output.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •C/R Oscillator	•TL403 MAIN •TL402 MAIN •Audio GND (A/V OUT)	•Playback the Audio Tape	*RT401 MAIN (FILTER L) *RT405 MAIN (FILTER R)	2.1V ± 0.1V

1) Connect the oscilloscope to TL403.
2) Trigger the oscilloscope at SW25.
3) Adjust RT401 so the waveform is as shown in Fig.3-10.
4) Connect the oscilloscope to TL402.
5) Adjust RT405 to maximize the amplitude of the waveform. (See Fig. 3-11)

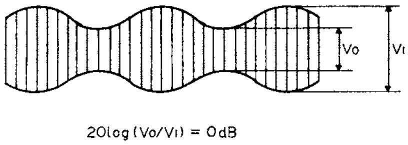


Fig. 3-10

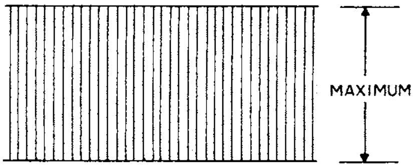


Fig. 3-11

(2) Deviation Adjustment (Fig. 3-2)

PURPOSE	•Set the audio output level.			
INCOMPLETED PHENOMENON	•L-channel and R-channel audio levels are different.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Millivoltmeter •C/R Oscillator	•TL408 MAIN •TL407 MAIN •Audio GND (AV OUT)	•Playback the Audio Tape.	*RT402 MAIN (DEV. L) *RT404 MAIN (DEV. R)	-15dB ± 0.5dB

1) Connect the millivoltmeter to TL408.
2) Adjust RT402 for -15dB ± 0.5dB.
3) Connect the millivoltmeter to TL407.
4) Adjust RT404 for -15dB ± 0.5dB.

(3) Playback Matrix Adjustment (Fig. 3-2)

PURPOSE	•To separate the L-channel and R-channel audio appropriately during playback.			
INCOMPLETED PHENOMENON	•L-channel and R-channel audi cannot be played back appropriately.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •C/R Oscillator	•Audio Output R-channel (AV OUT) •Audio GND (AV OUT)	•Playback the Audio Tape.	*RT403 MAIN (PB MATRIX)	-15dB ± 0.5dB

1) Connect the osilloscope to audio output R-channel.
2) Trigger the oscilloscope internally.
3) Connect the millivoltmeter to audio output R-channel.
4) Adjust RT403 to minimize the waveform.

3-10. DC-DC CONVERTER CIRCUIT ADJUSTMENT

Note: Be sure to confirm the DC-DC converter output voltage after replacing components other than the fuse in the converter.

(1) Output Voltage Confirmation/Adjustment (Fig. 3-2)

PURPOSE	• To set the DC-DC converter output voltage to the specified value.			
INCOMPLETED PHENOMENON	• The camera/recorder does not operate normally.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•DVM	•TL552 MAIN •PG551-1 (GND) MAIN •TL572 (C5V) MAIN •TL574 (C9V) MAIN		*RT551 MAIN (5V ADJ-1) *RT552 MAIN (5V ADJ-2) *RT553 MAIN (C5V ADJ)	•5.05V ± 0.03V •5.05V ± 0.03V

♦Confirmation
1) TL552 : 5.05V ± 0.03V
2) TL572 : 5.05V ± 0.03V

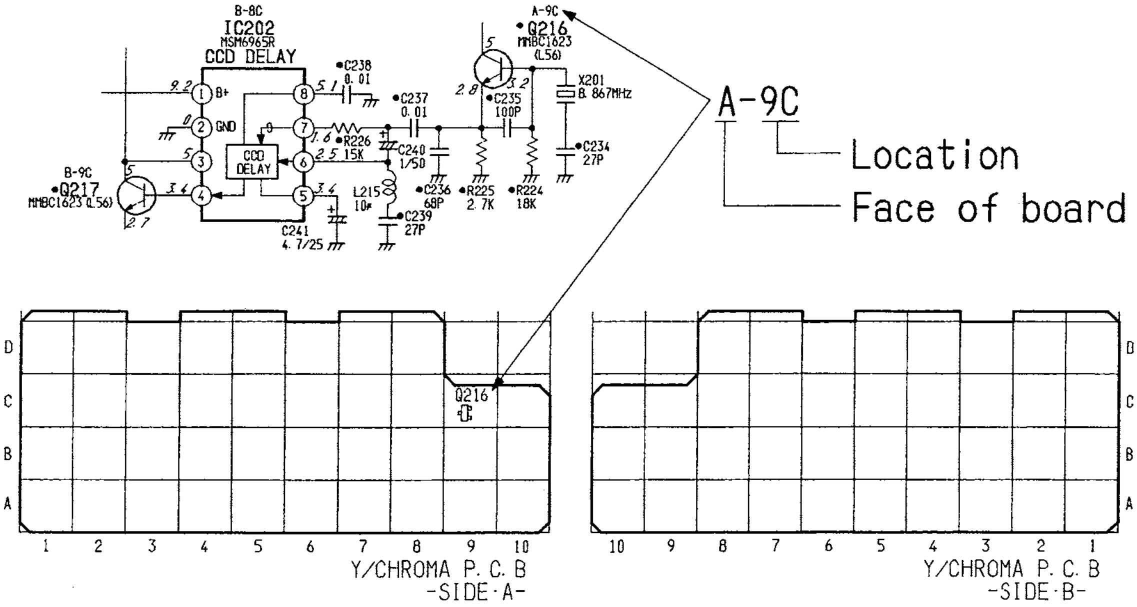
♦Adjustment
1) Adjust RT551 and RT552 so the voltage at TL552 is 5.05V ± 0.03V.
2) Adjust RT553 so the voltage at TL572 is 5.05V ± 0.03V.

SCHEMATIC & CIRCUIT BOARD DIAGRAMS

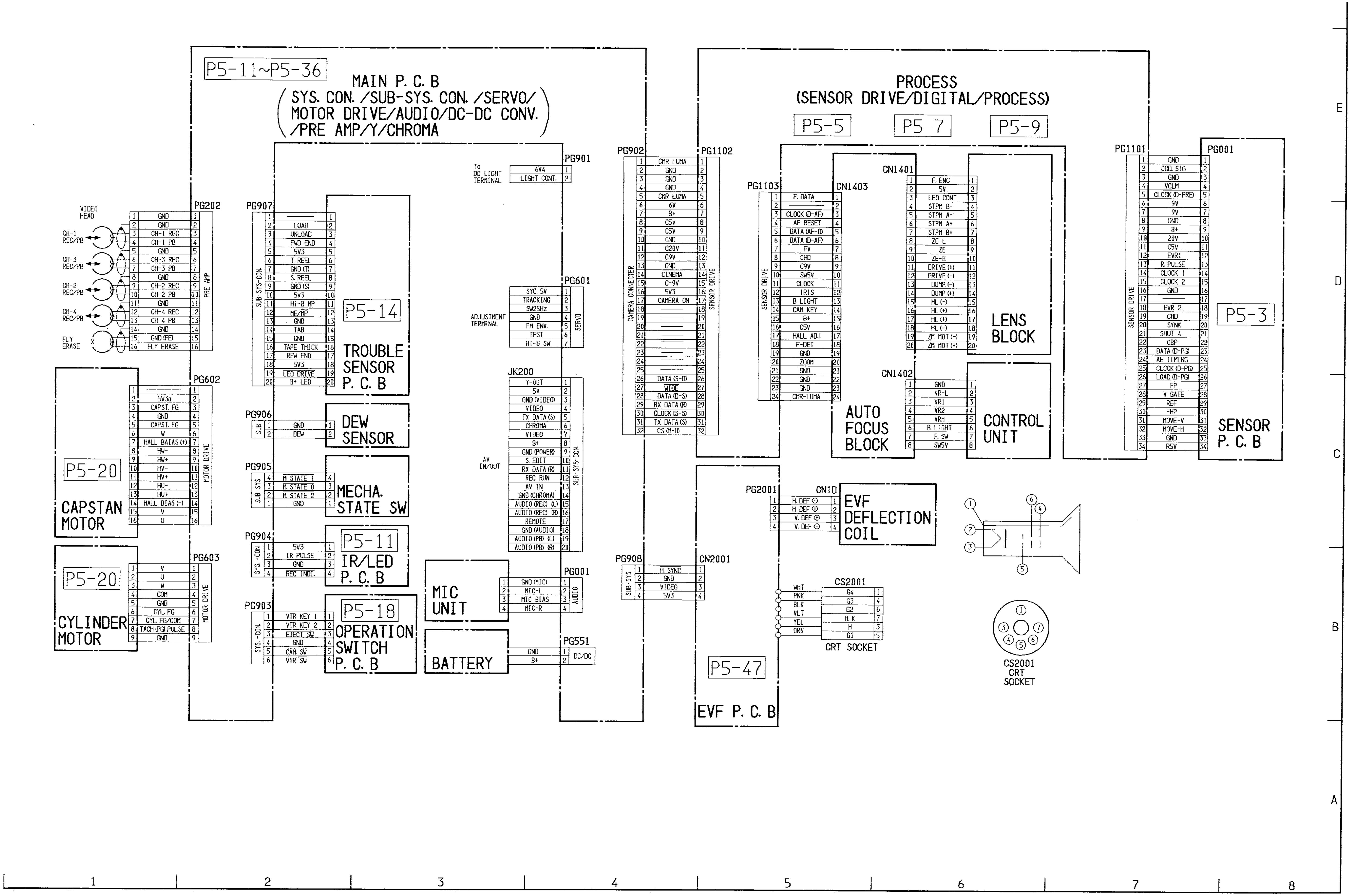
MODEL: VM-H37E

[Indications of semiconductor locations]

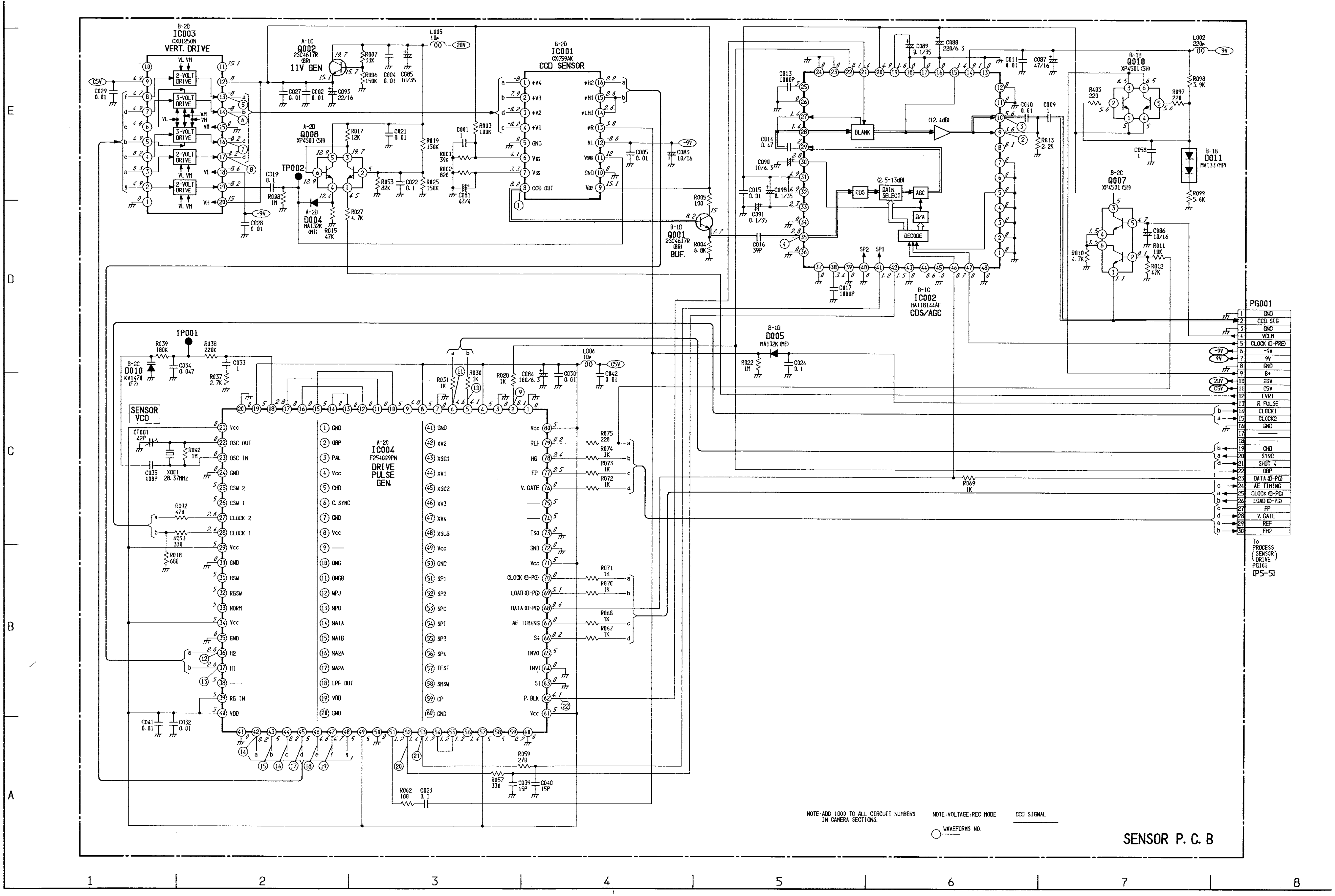
The locations of semiconductors (ICs, transistors, diodes, etc.) are shown in the schematic diagrams in this service manual. Use the indications to locate the parts on the circuit boards.


B-8C
IC202
MSM6965R
CCD DELAY
B+
GND
CCD DELAY
9.2
0
5
3.4
5.1
1.6
2.5
3.4
●C238 0.01
●C237 0.01
●R226 15K
C240 1/50
L215 10µ
●C236 68P
●C239 27P
C241 4.7/25
●R225 2.7K
●R224 18K
●C235 100P
X201 8.867MHz
●C234 27P
A-9C
●Q216
MMBC1623 (L56)
5
2.8
3.2
B-9C
●Q217
MMBC1623 (L56)
5
2.7
A-9C
Location
Face of board
Q216
D
C
B
A
1 2 3 4 5 6 7 8 9 10
Y/CHROMA P.C.B
-SIDE·A-
10 9 8 7 6 5 4 3 2 1
Y/CHROMA P.C.B
-SIDE·B-

INTERNAL WIRING DIAGRAM


P5-11~P5-36
MAIN P. C. B
(SYS. CON. /SUB-SYS. CON. /SERVO/ MOTOR DRIVE/AUDIO/DC-DC CONV. /PRE AMP/Y/CHROMA)
PROCESS
(SENSOR DRIVE/DIGITAL/PROCESS)
P5-5
P5-7
P5-9
VIDEO HEAD
CH-1 REC/PB
CH-3 REC/PB
CH-2 REC/PB
CH-4 REC/PB
FLY ERASE
PG202
PRE AMP
PG907
SUB SYS-CON.
P5-14
TROUBLE SENSOR P. C. B
PG906
DEW SENSOR
PG905
MECHA. STATE SW
PG904
P5-11
IR/LED P. C. B
PG903
P5-18
OPERATION SWITCH P. C. B
P5-20
CAPSTAN MOTOR
PG602
MOTOR DRIVE
P5-20
CYLINDER MOTOR
PG603
MIC UNIT
PG001
AUDIO
BATTERY
PG551
DC/DC
To DC LIGHT TERMINAL
PG901
ADJUSTMENT TERMINAL
PG601
SERVO
AV IN/OUT
JK200
SUB SYS-CON.
PG902
CAMERA CONNECTER
PG1102
SENSOR DRIVE
PG908
SUB-SYS
CN2001
P5-47
EVF P. C. B
PG2001
CN1D
EVF DEFLECTION COIL
CS2001
CRT SOCKET
CS2001 CRT SOCKET
PG1103
SENSOR DRIVE
CN1403
AUTO FOCUS BLOCK
CN1401
LENS BLOCK
CN1402
CONTROL UNIT
PG1101
SENSOR DRIVE
PG001
P5-3
SENSOR P. C. B
E
D
C
B
A
1
2
3
4
5
6
7
8

SENSOR SCHEMATIC DIAGRAM


IC003 CXD1250N VERT. DRIVE
2-VOLT DRIVE
3-VOLT DRIVE
Q002 2SC4617R (BR) 11V GEN
Q008 XP4501 (SH)
TP002
D004 MA132K (M1)
IC001 CX059AK CCD SENSOR
Q001 2SC4617R (BR) BUF.
IC002 HA118144AF CDS/AGC
BLANK
CDS
GAIN SELECT
AGC
D/A
DECODE
Q010 XP4501 (SH)
D011 MA133 (MP)
Q007 XP4501 (SH)
TP001
D010 KV1470 (F7)
SENSOR VCO
X001 28.37MHz
IC004 F254089PN DRIVE PULSE GEN.
D005 MA132K (M1)
PG001
1 GND
2 CCD SIG
3 GND
4 VCLM
5 CLOCK (D-PRE)
6 -9V
7 9V
8 GND
9 B+
10 20V
11 C5V
12 EVR1
13 R.PULSE
14 CLOCK1
15 CLOCK2
16 GND
19 CHD
20 SYNC
21 SHUT. 4
22 OBP
23 DATA (D-PG)
24 AE TIMING
25 CLOCK (D-PG)
26 LOAD (D-PG)
27 FP
28 V. GATE
29 REF
30 FH2
To PROCESS (SENSOR DRIVE) PG101 [P5-5]
1
2
3
4
5
6
7
8
A
B
C
D
E

NOTE: ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTIONS.

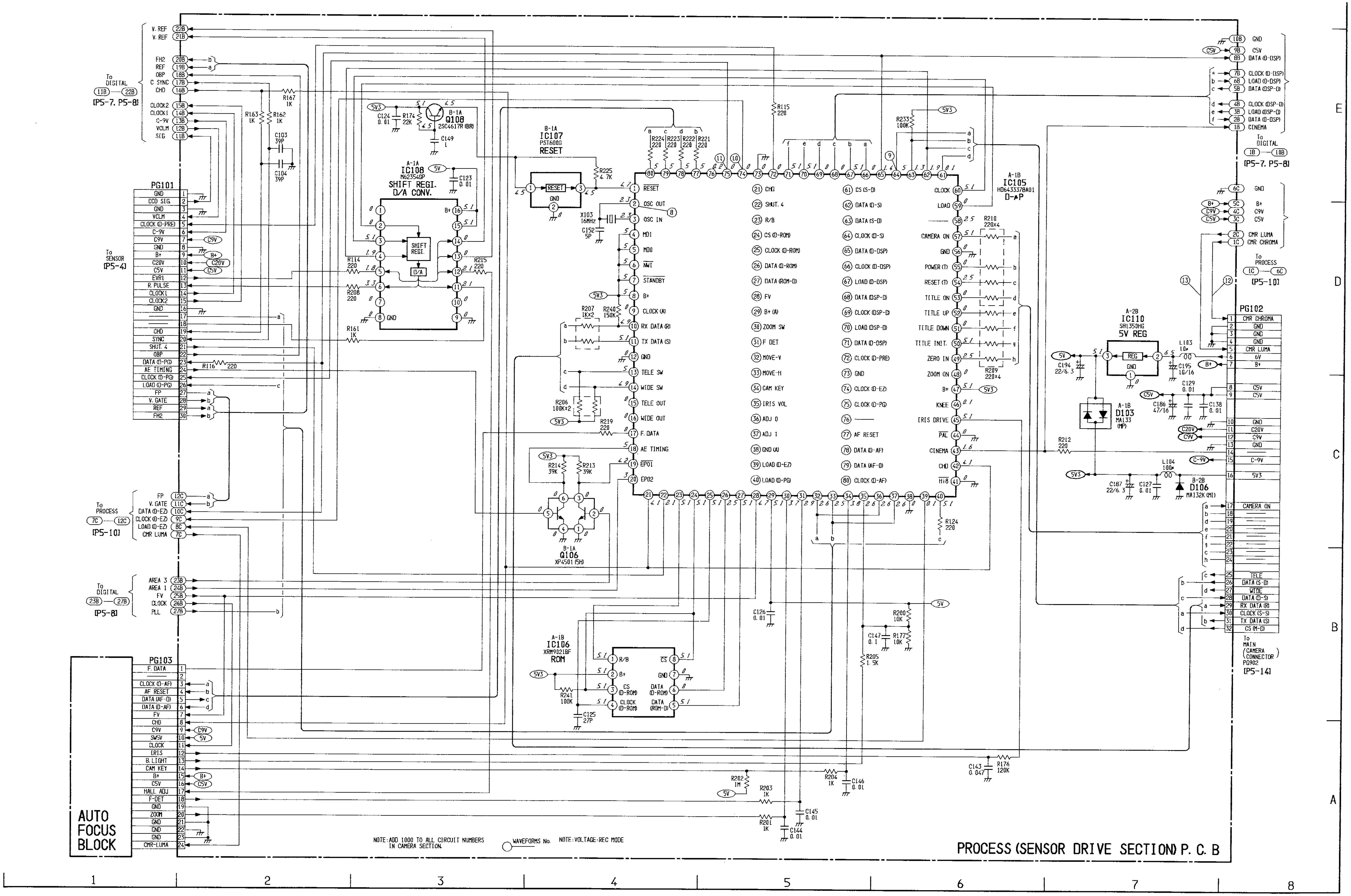
NOTE: VOLTAGE: REC MODE

CCD SIGNAL

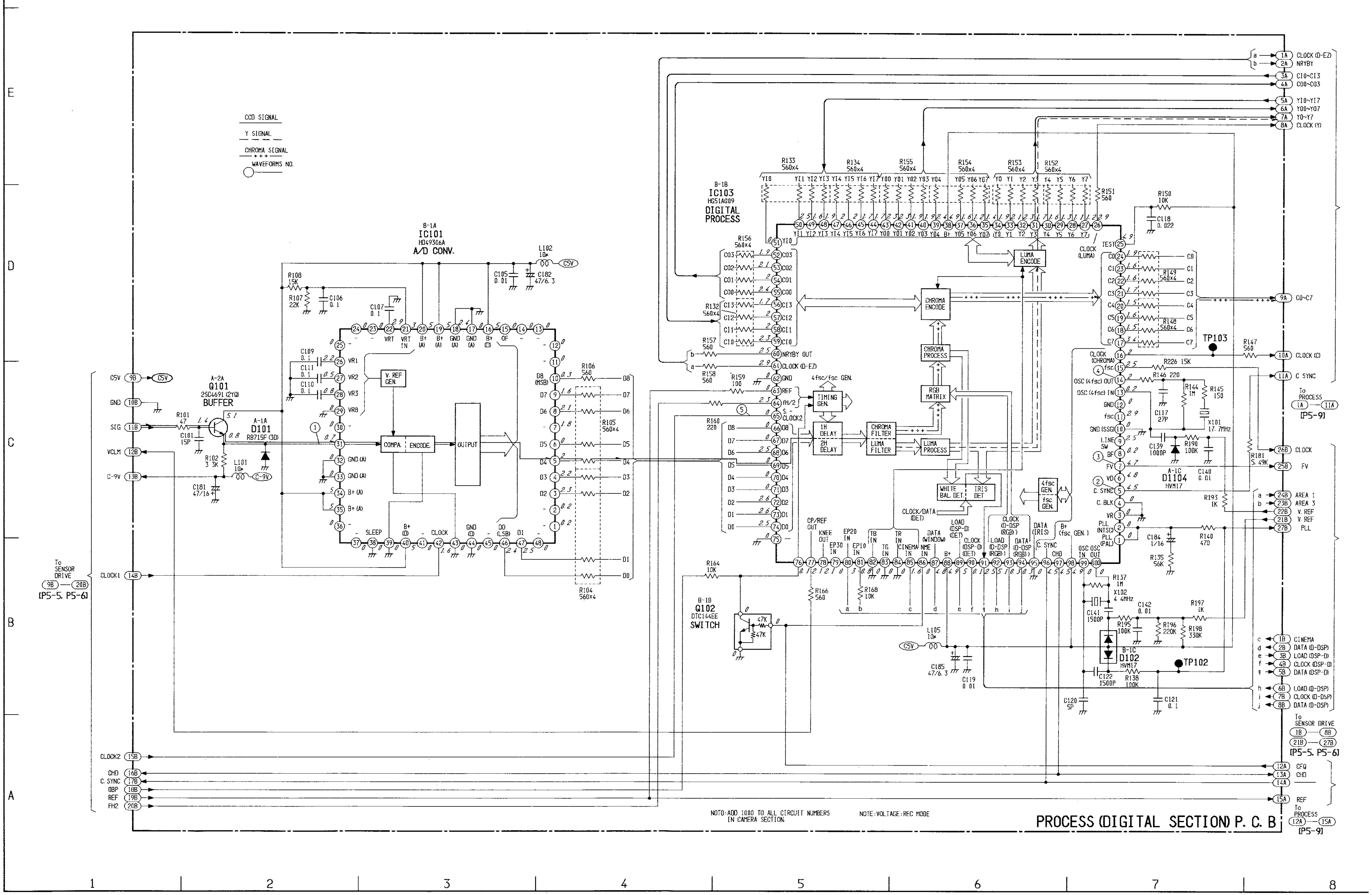
WAVEFORMS NO.

SENSOR P. C. B

PROCESS (SENSOR DRIVE SECTION) SCHEMATIC DIAGRAM

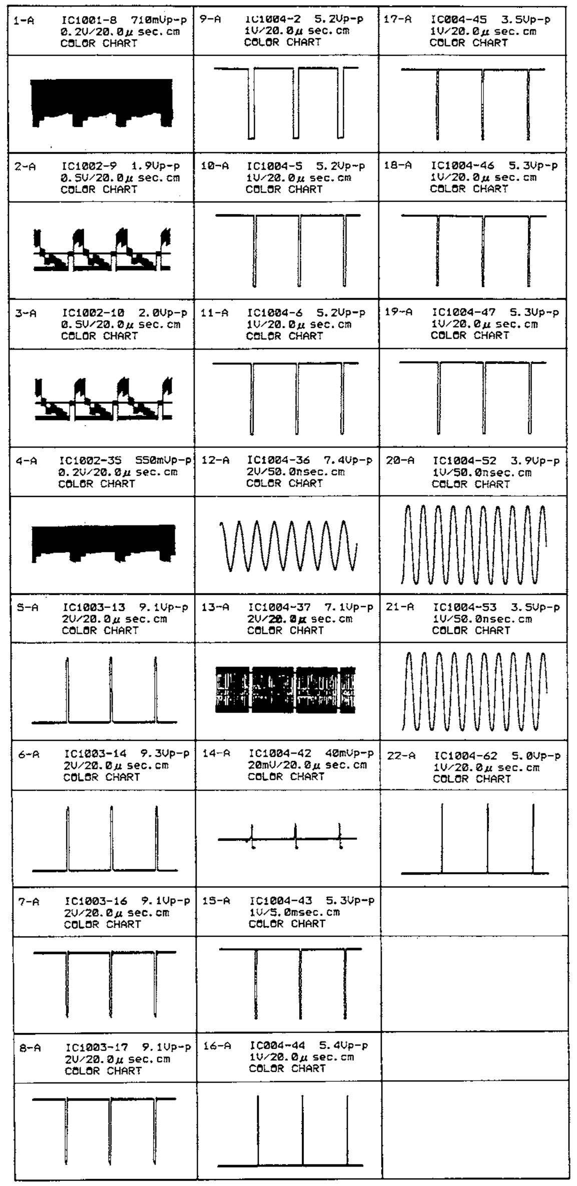

V. REF
FH2
REF
OBP
C SYNC
CHD
CLOCK2
CLOCK1
C-9V
VCLM
SIG
To DIGITAL (11B)—(22B) [P5-7, P5-8]
PG101
GND
CCD SIG
VCLM
CLOCK (D-PRE)
C-9V
C9V
B+
C20V
C5V
EVR1
R. PULSE
CLOCK1
CLOCK2
CHD
SYNC
SHUT 4
OBP
DATA (D-PG)
AE TIMING
CLOCK (D-PG)
LOAD (D-PG)
FP
V. GATE
REF
FH2
To SENSOR [P5-4]
R167 1K
R163 1K
R162 1K
C103 39P
C104 39P
R116 220
C124 0.01
R174 22K
B-1A Q108 2SC4617R (BR)
C149 L
A-1A IC108 M62354GP SHIFT REGI. D/A CONV.
SHIFT REGI.
D/A
C123 0.01
R114 220
R208 220
R215 220
R161 1K
B-1A IC107 PST600G RESET
R225 4.7K
X103 16MHz
C152 5P
R207 1K×2
R240 150K
R206 100K×2
R219 220
R214 39K
R213 39K
B-1A Q106 XP4501 (5H)
R224 220
R223 220
R222 220
R221 220
R115 220
R233 100K
A-1B IC105 HD6433378A01 D-μP
RESET
OSC OUT
OSC IN
MD1
MD0
NMI
STANDBY
B+
CLOCK (A)
RX DATA (R)
TX DATA (S)
GND
TELE SW
WIDE SW
TELE OUT
WIDE OUT
F. DATA
AE TIMING
EP01
EP02
(21) CHD
(22) SHUT. 4
(23) R/B
(24) CS (D-ROM)
(25) CLOCK (D-ROM)
(26) DATA (D-ROM)
(27) DATA (ROM-D)
(28) FV
(29) B+ (A)
(30) ZOOM SW
(31) F DET
(32) MOVE-V
(33) MOVE-H
(34) CAM KEY
(35) IRIS VOL
(36) ADJ 0
(37) ADJ 1
(38) GND (A)
(39) LOAD (D-EZ)
(40) LOAD (D-PG)
(61) CS (S-D)
(62) DATA (D-S)
(63) DATA (S-D)
(64) CLOCK (D-S)
(65) DATA (D-DSP)
(66) CLOCK (D-DSP)
(67) LOAD (D-DSP)
(68) DATA (DSP-D)
(69) CLOCK (DSP-D)
(70) LOAD (DSP-D)
(71) DATA (D-DSP)
(72) CLOCK (D-PRE)
(73) GND
(74) CLOCK (D-EZ)
(75) CLOCK (D-PG)
(76) ——
(77) AF RESET
(78) DATA (D-AF)
(79) DATA (AF-D)
(80) CLOCK (D-AF)
CLOCK
LOAD
CAMERA ON
GND
POWER (T)
RESET (T)
TITLE ON
TITLE UP
TITLE DOWN
TITLE INIT.
ZERO IN
ZOOM ON
B+
KNEE
IRIS DRIVE
PAL
CINEMA
CHD
HI8
R210 220×4
R209 220×4
R124 220
GND
C5V
DATA (D-DSP)
CLOCK (D-DSP)
LOAD (D-DSP)
DATA (DSP-D)
CLOCK (DSP-D)
LOAD (DSP-D)
DATA (D-DSP)
CINEMA
To DIGITAL (1B)—(10B) [P5-7, P5-8]
GND
B+
C9V
C5V
CMR LUMA
CMR CHROMA
To PROCESS (1C)—(6C) [P5-10]
A-2B IC110 SN1350HG 5V REG
REG
L103 10μ
C194 22/6.3
C195 10/16
C129 0.01
C186 47/16
C138 0.01
A-1B D103 MA133 (MP)
R212 220
L104 100μ
C187 22/6.3
C127 0.01
B-2B D106 MA132K (MI)
PG102
CMR CHROMA
GND
CMR LUMA
6V
B+
C5V
GND
C20V
C9V
C-9V
5V3
CAMERA ON
TELE
DATA (S-D)
WIDE
DATA (D-S)
RX DATA (R)
CLOCK (S-S)
TX DATA (S)
CS (M-D)
To MAIN (CAMERA CONNECTOR) PG902 [P5-14]
FP
V. GATE
DATA (D-EZ)
CLOCK (D-EZ)
LOAD (D-EZ)
CMR LUMA
To PROCESS (7C)—(12C) [P5-10]
AREA 3
AREA 1
FV
CLOCK
PLL
To DIGITAL (23B)—(27B) [P5-8]
A-1B IC106 XRM9021BF ROM
R/B
B+
CS (D-ROM)
CLOCK (D-ROM)
CS
GND
DATA (D-ROM)
DATA (ROM-D)
R241 100K
C125 27P
C126 0.01
R200 10K
C147 0.1
R177 10K
R205 1.5K
C143 0.047
R176 120K
R202 1M
R203 1K
R204 1K
C146 0.01
C145 0.01
R201 1K
C144 0.01
PG103
F. DATA
CLOCK (D-AF)
AF RESET
DATA (AF-D)
DATA (D-AF)
FV
CHD
C9V
SW5V
CLOCK
IRIS
B. LIGHT
CAM KEY
B+
C5V
HALL ADJ
F-DET
GND
ZOOM
GND
GND
CMR-LUMA
AUTO FOCUS BLOCK
NOTE: ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
WAVEFORMS No.
NOTE: VOLTAGE: REC MODE
PROCESS (SENSOR DRIVE SECTION) P. C. B
1
2
3
4
5
6
7
8
A
B
C
D
E

PROCESS (DIGITAL SECTION) SCHEMATIC DIAGRAM

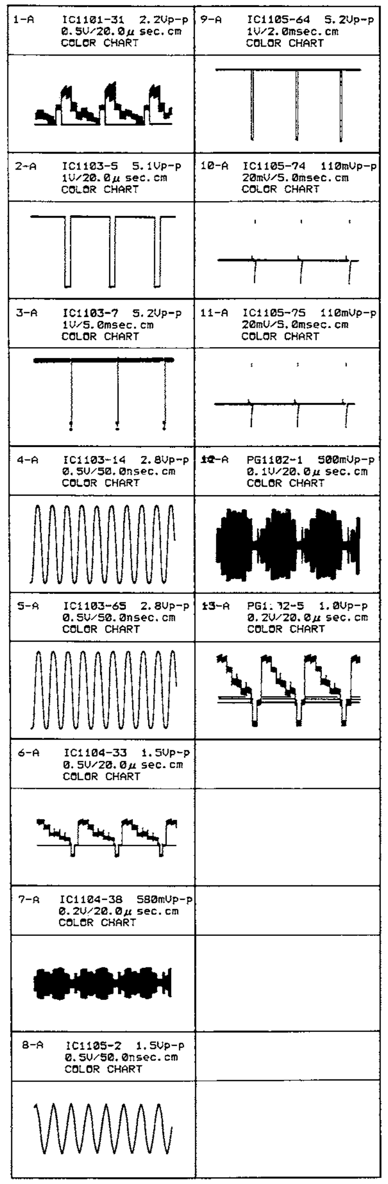

CCD SIGNAL
Y SIGNAL
CHROMA SIGNAL
WAVEFORMS NO.
B-1A
IC101
HD49306A
A/D CONV.
A-2A
Q101
2SC4691 (2YQ)
BUFFER
A-1A
D101
RB715F (3D)
V. REF GEN.
COMPA
ENCODE
OUTPUT
B-1B
IC103
HG51A009
DIGITAL PROCESS
TIMING GEN.
1H DELAY
2H DELAY
CHROMA FILTER
LUMA FILTER
LUMA PROCESS
CHROMA PROCESS
CHROMA ENCODE
RGB MATRIX
LUMA ENCODE
WHITE BAL. DET
IRIS DET
4fsc GEN.
fsc GEN.
A-1C
D1104
HVM17
B-1C
D102
HVM17
B-1B
Q102
DTC144EE
SWITCH
TP102
TP103
X101 17.7MHz
X102 4.4MHz
To SENSOR DRIVE
(9B) — (20B)
[P5-5, P5-6]
C5V (9B)
GND (10B)
SIG (11B)
VCLM (12B)
C-9V (13B)
CLOCK1 (14B)
CLOCK2 (15B)
CHD (16B)
C. SYNC (17B)
OBP (18B)
REF (19B)
FH2 (20B)
(1A) CLOCK (D-EZ)
(2A) NRYBY
(3A) CI0~CI3
(4A) CO0~CO3
(5A) YI0~YI7
(6A) YO0~YO7
(7A) Y0~Y7
(8A) CLOCK (Y)
(9A) C0~C7
(10A) CLOCK (C)
(11A) C SYNC
To PROCESS (1A) — (11A) [P5-9]
(26B) CLOCK
(25B) FV
(24B) AREA 1
(23B) AREA 3
(22B) V. REF
(21B) V. REF
(27B) PLL
(1B) CINEMA
(2B) DATA (D-DSP)
(3B) LOAD (DSP-D)
(4B) CLOCK (DSP-D)
(5B) DATA (DSP-D)
(6B) LOAD (D-DSP)
(7B) CLOCK (D-DSP)
(8B) DATA (D-DSP)
To SENSOR DRIVE (1B) — (8B) (21B) — (27B) [P5-5, P5-6]
(12A) CFQ
(13A) CHD
(14A)
(15A) REF
To PROCESS (12A) — (15A) [P5-9]
NOTO: ADD 1080 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
NOTE: VOLTAGE: REC MODE
PROCESS (DIGITAL SECTION) P. C. B
E
D
C
B
A
1
2
3
4
5
6
7
8

SENSOR/PROCESS WAVEFORMS

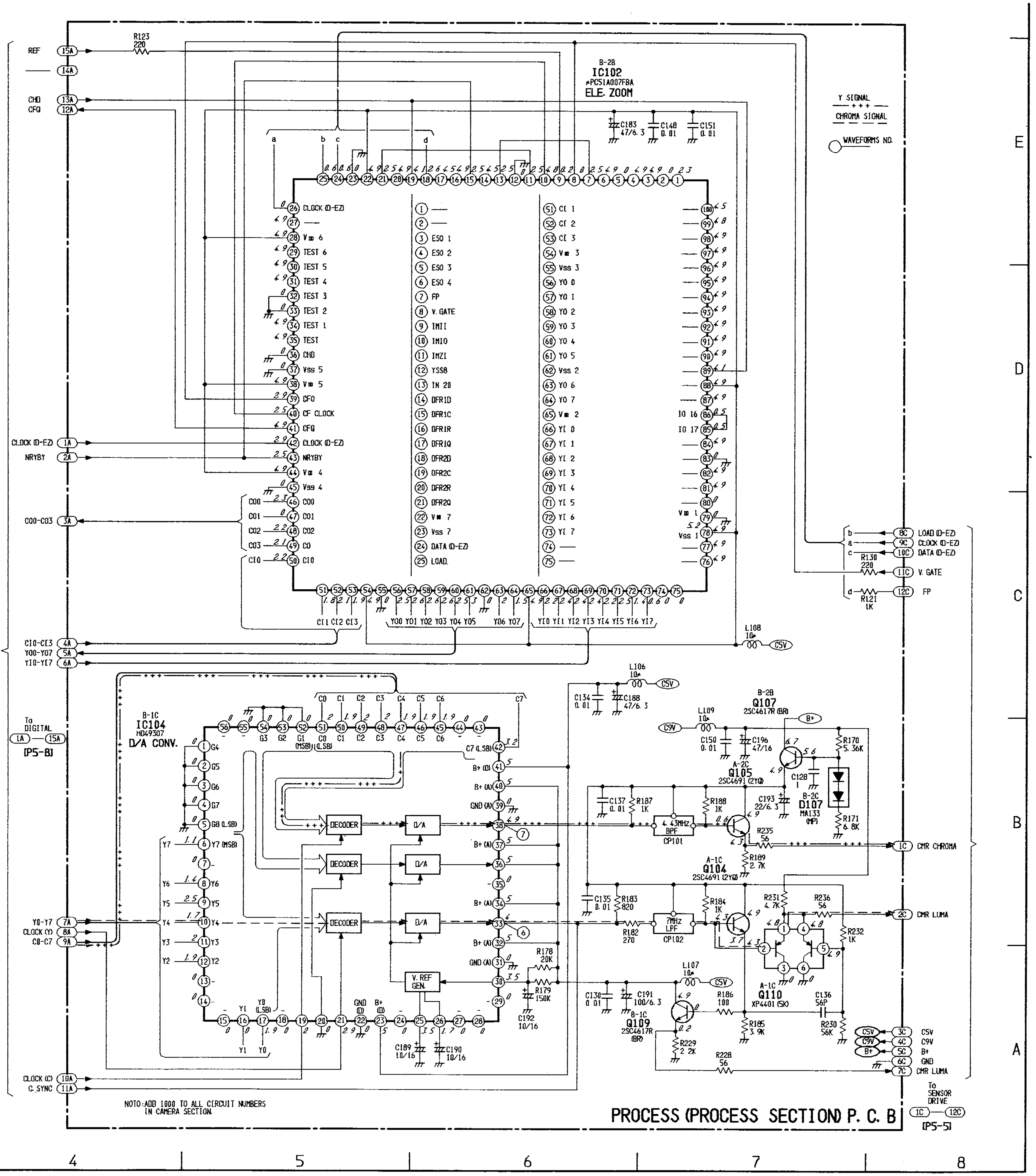
SENSOR



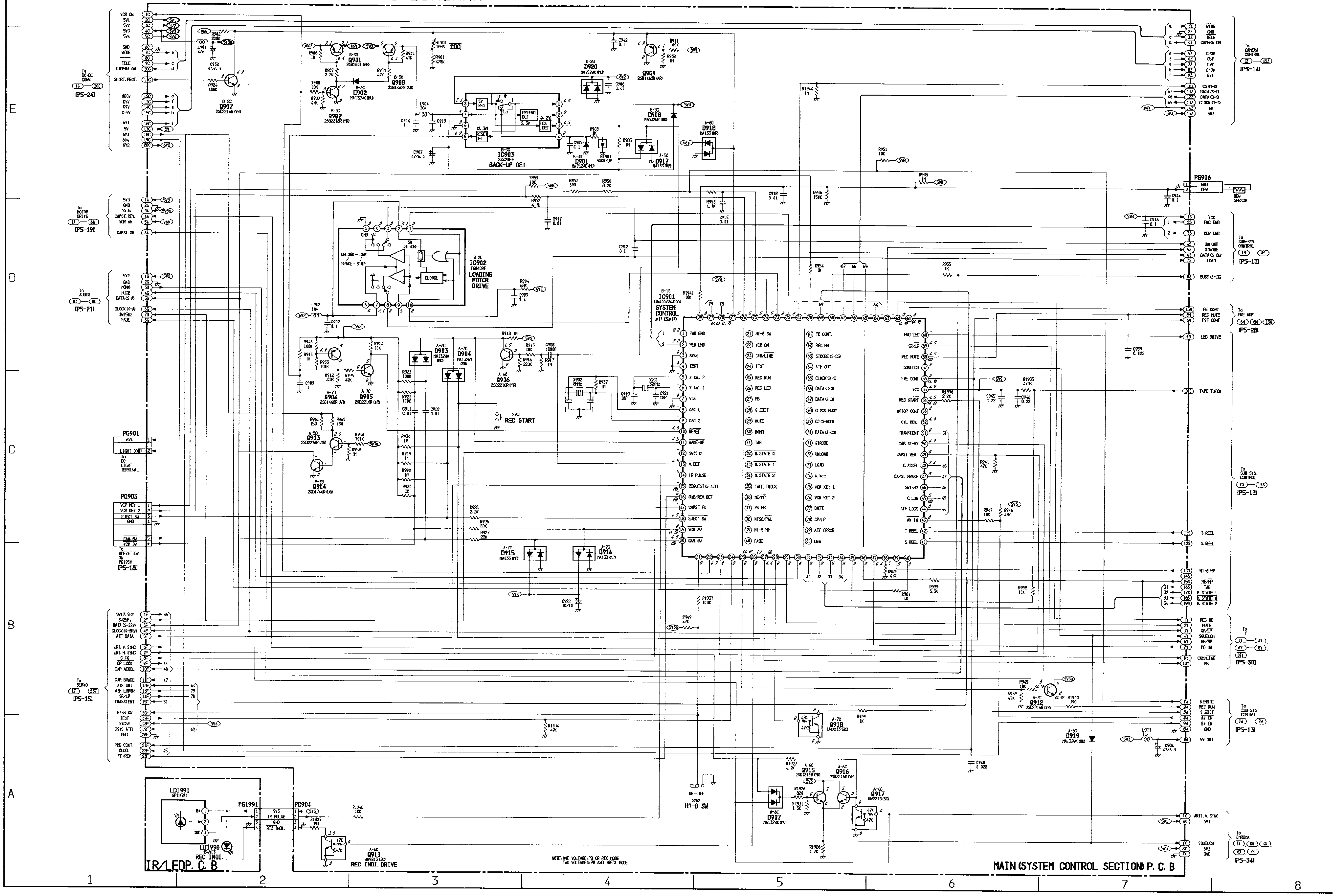
PROCESS



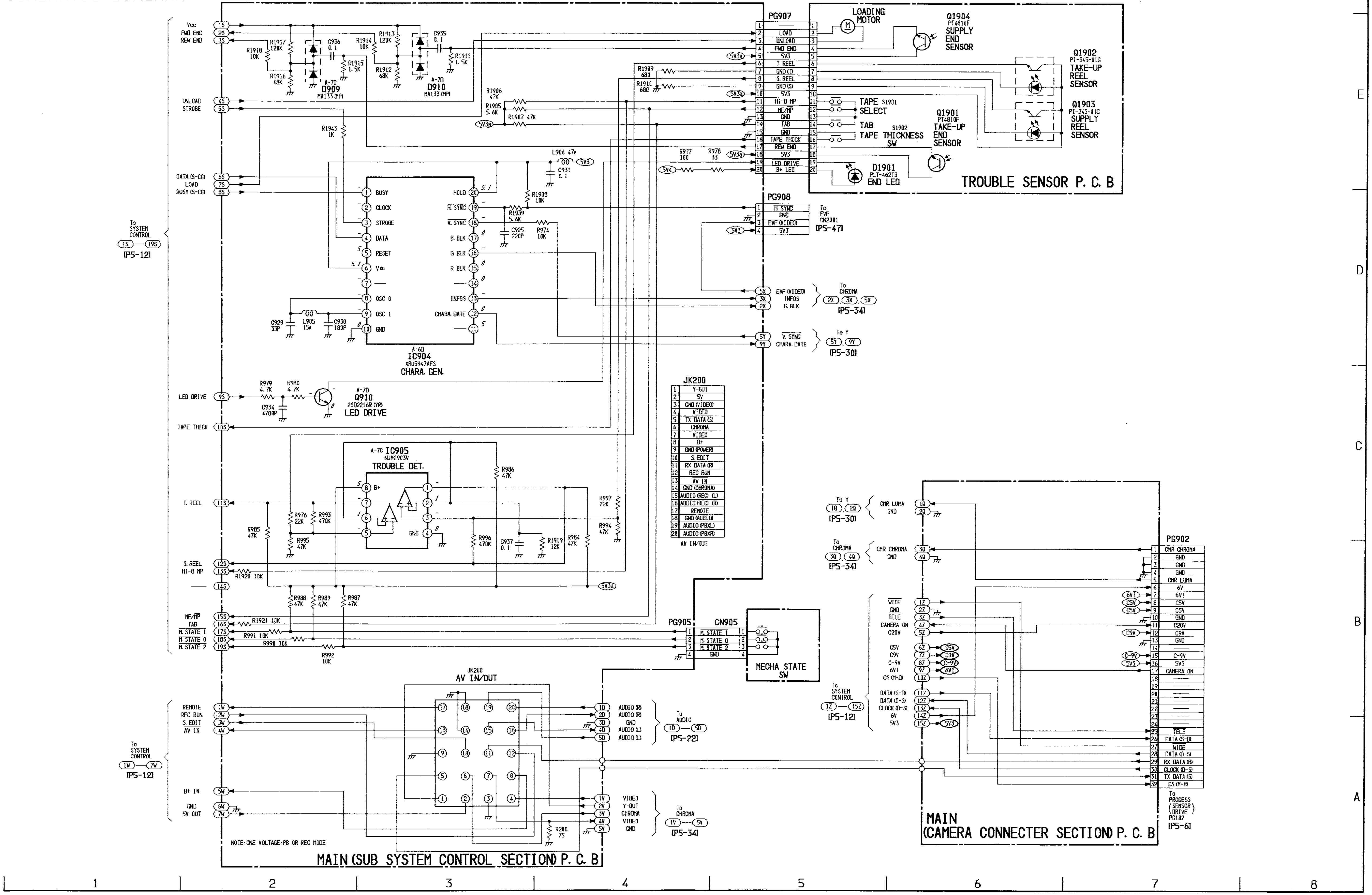
PROCESS (PROCESS SECTION) SCHEMATIC DIAGRAM


REF
15A
14A
CHD
CFQ
13A
12A
R123
220
B-2B
IC102
*PC51A007FBA
ELE. ZOOM
C183
47/6.3
C148
0.01
C151
0.01
a
b
c
d
26 CLOCK (D-EZ)
27 —
28 VDD 6
29 TEST 6
30 TEST 5
31 TEST 4
32 TEST 3
33 TEST 2
34 TEST 1
35 TEST
36 CHD
37 Vss 5
38 VDD 5
39 CFO
40 CF CLOCK
41 CFQ
42 CLOCK (D-EZ)
43 NRYBY
44 VDD 4
45 Vss 4
46 C00
47 C01
48 C02
49 C0
50 CI0
1 —
2 —
3 ESO 1
4 ESO 2
5 ESO 3
6 ESO 4
7 FP
8 V. GATE
9 IMII
10 IMIO
11 IMZI
12 YSS8
13 IN 20
14 DFR1D
15 DFR1C
16 DFR1R
17 DFR1Q
18 DFR2D
19 DFR2C
20 DFR2R
21 DFR2Q
22 VDD 7
23 Vss 7
24 DATA (D-EZ)
25 LOAD.
51 CI 1
52 CI 2
53 CI 3
54 VDD 3
55 Vss 3
56 YO 0
57 YO 1
58 YO 2
59 YO 3
60 YO 4
61 YO 5
62 Vss 2
63 YO 6
64 YO 7
65 VDD 2
66 YI 0
67 YI 1
68 YI 2
69 YI 3
70 YI 4
71 YI 5
72 YI 6
73 YI 7
74 —
75 —
IO 16
IO 17
VDD 1
Vss 1
C00
C01
C02
C03
CI0
CI1 CI2 CI3
Y00 Y01 Y02 Y03 Y04 Y05 Y06 Y07
YI0 YI1 YI2 YI3 YI4 YI5 YI6 YI7
CLOCK (D-EZ)
NRYBY
1A
2A
C00-C03
3A
CI0-CI3
Y00-Y07
YI0-YI7
4A
5A
6A
L108
10µ
C5V
To
DIGITAL
1A — 15A
[P5-8]
B-1C
IC104
HD49307
D/A CONV.
G4
G5
G6
G7
G8 (LSB)
Y7 (MSB)
Y7
Y6
Y5
Y4
Y3
Y2
Y1
Y0
Y0 (LSB)
G3
G2
G1 (MSB)
C0 (LSB)
C0 C1 C2 C3 C4 C5 C6 C7
C7 (LSB)
B+ (D)
B+ (A)
GND (A)
GND (D)
DECODER
D/A
V. REF GEN.
R178
20K
R179
150K
C192
10/16
C189
10/16
C190
10/16
Y0-Y7
CLOCK (Y)
C0-C7
7A
8A
9A
CLOCK (C)
C. SYNC
10A
11A
NOTO:ADD 1000 TO ALL CIRCUIT NUMBERS
IN CAMERA SECTION.
L106
10µ
C5V
C134
0.01
C188
47/6.3
L109
10µ
C9V
C150
0.01
C196
47/16
B-2B
Q107
2SC4617R (BR)
B+
R170
5.36K
C128
1
A-2C
Q105
2SC4691 (2YQ)
C137
0.01
R187
1K
4.43MHz
BPF
CP101
R188
1K
C193
22/6.3
B-2C
D107
MA133
(MP)
R171
6.8K
R235
56
R189
2.7K
A-1C
Q104
2SC4691 (2YQ)
C135
0.01
R183
820
R182
270
7MHz
LPF
CP102
R184
1K
R231
4.7K
R236
56
R232
1K
L107
10µ
C5V
C130
0.01
C191
100/6.3
B-1C
Q109
2SC4617R
(BR)
R186
100
A-1C
Q110
XP4401 (SK)
C136
56P
R185
3.9K
R230
56K
R229
2.2K
R228
56
Y SIGNAL
+ + +
CHROMA SIGNAL
WAVEFORMS NO.
LOAD (D-EZ)
CLOCK (D-EZ)
DATA (D-EZ)
V. GATE
FP
8C
9C
10C
11C
12C
R130
220
R121
1K
1C
CMR CHROMA
2C
CMR LUMA
C5V
C9V
B+
GND
CMR LUMA
3C
4C
5C
6C
7C
To
SENSOR
DRIVE
1C — 12C
[P5-5]
PROCESS (PROCESS SECTION) P. C. B
E
D
C
B
A
1
2
3
4
5
6
7
8

MAIN (SYSTEM CONTROL SECTION) SCHEMATIC DIAGRAM

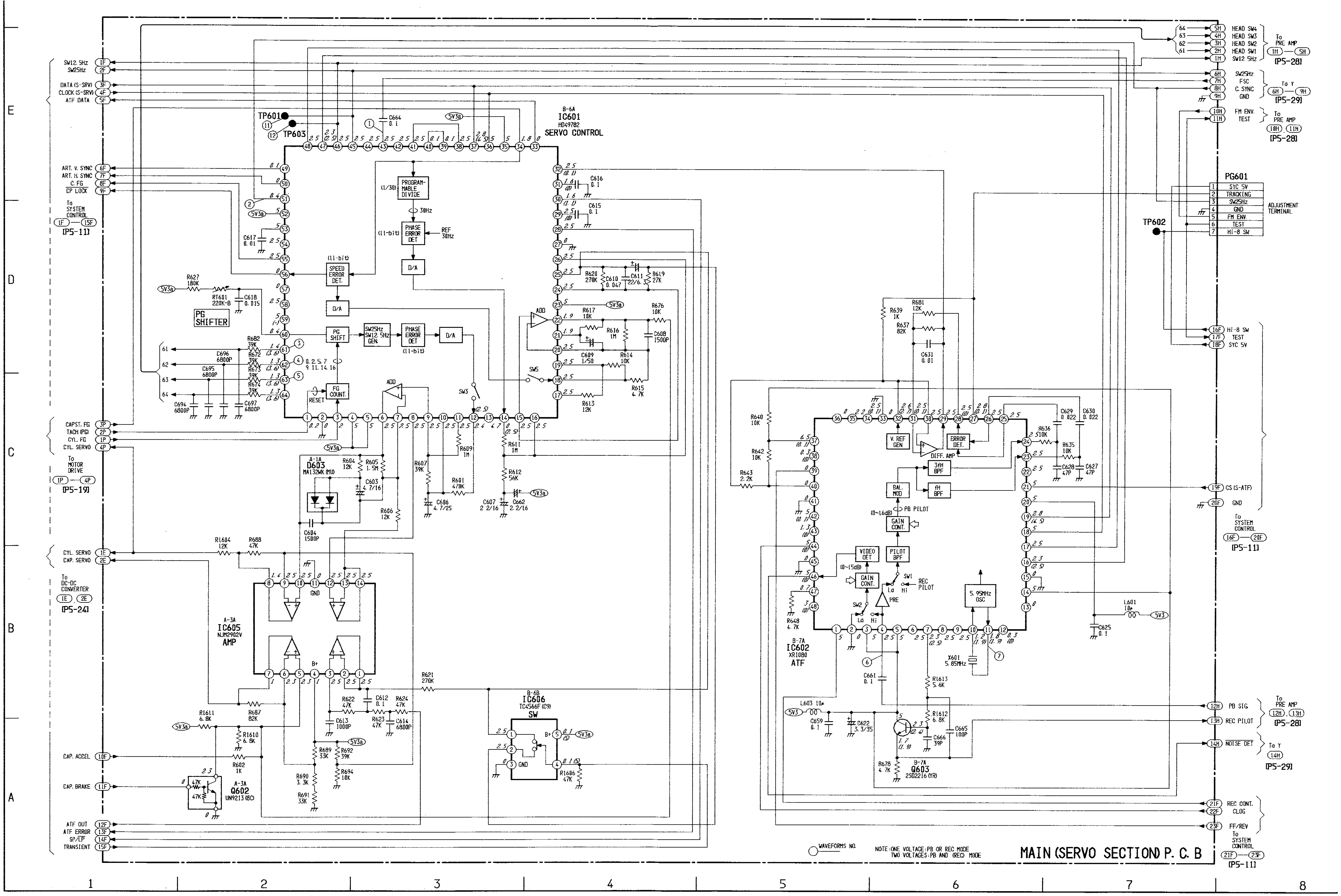

IC901 HD6433724A27H SYSTEM CONTROL μP (SμP)
IC902 TA8409F LOADING MOTOR DRIVE
IC903 S8429FF BACK-UP DET
Q901 2SB1001
Q902 2SD2216R
Q904 2SB1462R
Q905 2SD2216R
Q906 2SD2216R
Q907 2SD2216R
Q908 2SB1462R
Q909 2SB1462R
Q912 2SD2216R
Q913 2SD2216R
Q914 2SD1764R
Q915 2SD1819R
Q916 2SD2216R
Q917 UN9213
Q918 UN9213
Q911 UN9213 REC INDI. DRIVE
D902 MA132WK
D903 MA132WA
D904 MA132WA
D908 MA132WK
D915 MA133
D916 MA133
D917 MA133
D918 MA133
D919 MA132WK
D920 MA152WK
D987 MA132WK
S901 REC START
S902 Hi-8 SW ON-OFF
X901 32kHz
X902 8MHz
PG901 6V4 LIGHT CONT To DC LIGHT TERMINAL
PG903 VCR KEY 1 VCR KEY 2 EJECT SW GND CAM SW VCR SW To OPERATION SW PG1958 [P5-18]
PG906 GND DEW DEW SENSOR
PG904
PG1991
LD1991 GP1U591
LD1990 HSAV13 REC INDI.
IR/LED P. C. B
To DC-DC CONV. [P5-24]
To MOTOR DRIVE [P5-19]
To AUDIO [P5-21]
To SERVO [P5-15]
To CAMERA CONTROL [P5-14]
To SUB-SYS CONTROL [P5-13]
To PRE AMP [P5-28]
To Y [P5-30]
To CHROMA [P5-34]
NOTE: ONE VOLTAGE PB OR REC MODE TWO VOLTAGES PB AND (REC) MODE
MAIN (SYSTEM CONTROL SECTION) P. C. B
1
2
3
4
5
6
7
8
E
D
C
B
A

MAIN (SUB SYSTEM CONTROL SECTION/CAMERA CONNECTER SECTION), TROUBLE SENSOR SCHEMATIC DIAGRAM

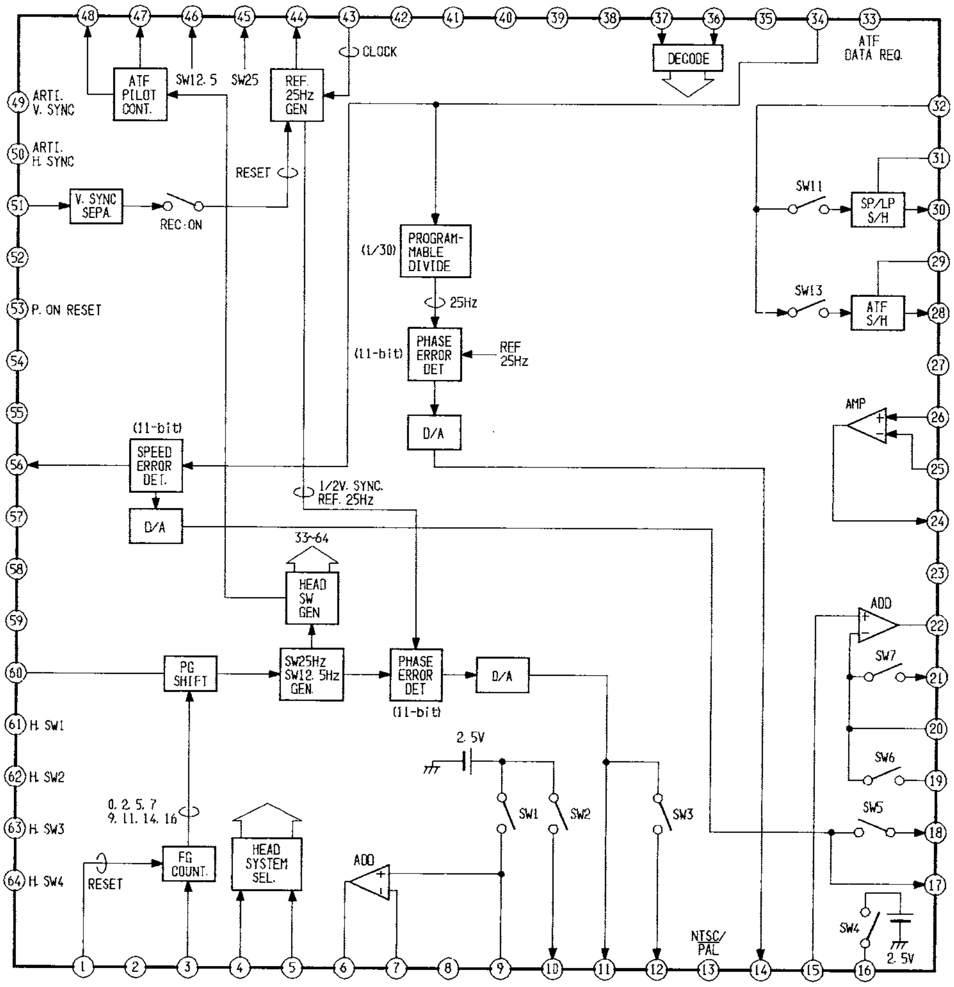


Vcc
FWD END
REW END
UNLOAD
STROBE
DATA (S-C)
LOAD
BUSY (S-C)
To SYSTEM CONTROL
1S — 19S
[P5-12]
LED DRIVE
TAPE THICK
T. REEL
S. REEL
Hi-8 MP
ME/MP
TAB
M. STATE 1
M. STATE 0
M. STATE 2
R1918 10K
R1917 120K
R1916 68K
C936 0.1
R1915 1.5K
A-7D D909 MA133 (MP)
R1914 10K
R1913 120K
R1912 68K
C935 0.1
R1911 1.5K
A-7D D910 MA133 (MP)
R1906 47K
R1905 5.6K
R1907 47K
R1909 680
R1910 680
R1943 1K
L906 47µ
C931 0.1
R1908 10K
R1939 5.6K
C925 220P
R974 10K
BUSY
CLOCK
STROBE
DATA
RESET
VDD
OSC 0
OSC 1
GND
HOLD
H. SYNC
V. SYNC
B. BLK
G. BLK
R. BLK
INFOS
CHARA. DATE
C929 33P
L905 15µ
C930 180P
A-6D IC904 XRU5947AFS CHARA. GEN.
R979 4.7K
R980 4.7K
C934 4700P
A-7D Q910 2SD2216R (YR) LED DRIVE
A-7C IC905 NJM2903V TROUBLE DET.
R986 47K
R976 22K
R993 470K
R985 47K
R995 47K
R996 470K
C937 0.1
R1919 12K
R984 47K
R997 22K
R994 47K
R1920 10K
R988 47K
R989 47K
R987 47K
R1921 10K
R991 10K
R990 10K
R992 10K
PG907
LOAD
UNLOAD
FWD END
5V3
T. REEL
GND (D)
S. REEL
GND (S)
Hi-8 MP
ME/MP
GND
TAB
TAPE THICK
REW END
LED DRIVE
B+ LED
R977 100
R978 33
LOADING MOTOR
Q1904 PT4810F SUPPLY END SENSOR
Q1902 PI-345-01G TAKE-UP REEL SENSOR
Q1903 PI-345-01G SUPPLY REEL SENSOR
TAPE SELECT S1901
TAB
TAPE THICKNESS SW S1902
Q1901 PT4810F TAKE-UP END SENSOR
D1901 PLT-462T3 END LED
TROUBLE SENSOR P.C.B
PG908
H. SYNC
GND
EVF (VIDEO)
5V3
To EVF CN2001 [P5-47]
EVF (VIDEO)
INFOS
G. BLK
To CHROMA 2X, 3X, 5X [P5-34]
V. SYNC
CHARA. DATE
To Y 5Y, 9Y [P5-30]
JK200
Y-OUT
5V
GND (VIDEO)
VIDEO
TX DATA (S)
CHROMA
VIDEO
B+
GND (POWER)
S EDIT
RX DATA (R)
REC RUN
AV IN
GND (CHROMA)
AUDIO (REC) (L)
AUDIO (REC) (R)
REMOTE
GND (AUDIO)
AUDIO (PBKL)
AUDIO (PBKR)
AV IN/OUT
PG905
CN905
M. STATE 1
M. STATE 0
M. STATE 2
GND
MECHA STATE SW
REMOTE
REC RUN
S. EDIT
AV IN
B+ IN
GND
5V OUT
To SYSTEM CONTROL 1W — 7W [P5-12]
JK200 AV IN/OUT
AUDIO (R)
AUDIO (R)
GND
AUDIO (L)
AUDIO (L)
To AUDIO 1D — 5D [P5-22]
VIDEO
Y-OUT
CHROMA
VIDEO
GND
To CHROMA 1V — 5V [P5-34]
R200 75
NOTE: ONE VOLTAGE: PB OR REC MODE
MAIN (SUB SYSTEM CONTROL SECTION) P.C.B
To Y 1Q, 2Q [P5-30]
CMR LUMA
GND
To CHROMA 3Q, 4Q [P5-34]
CMR CHROMA
GND
WIDE
GND
TELE
CAMERA ON
C20V
C5V
C9V
C-9V
6V1
CS (M-D)
DATA (S-D)
DATA (D-S)
CLOCK (D-S)
6V
5V3
To SYSTEM CONTROL 1Z — 15Z [P5-12]
PG902
CMR CHROMA
GND
CMR LUMA
6V
6V1
C5V
C20V
C9V
C-9V
5V3
CAMERA ON
TELE
DATA (S-D)
WIDE
DATA (D-S)
RX DATA (R)
CLOCK (D-S)
TX DATA (S)
CS (M-D)
To PROCESS (SENSOR DRIVE) PG102 [P5-6]
MAIN (CAMERA CONNECTER SECTION) P.C.B
A
B
C
D
E
1
2
3
4
5
6
7
8

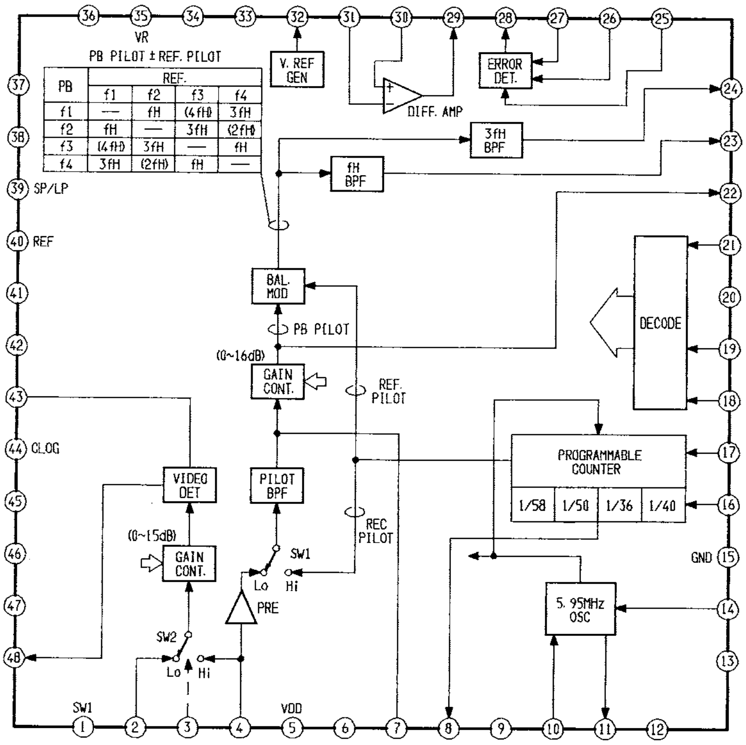
MAIN (SERVO SECTION) SCHEMATIC DIAGRAM


SW12.5Hz
SW25Hz
DATA (S-SRV)
CLOCK (S-SRV)
ATF DATA
ART. V. SYNC
ART. H. SYNC
C.FG
CP LOCK
To SYSTEM CONTROL 1F — 15F [P5-11]
CAPST. FG
TACH (PG)
CYL. FG
CYL. SERVO
To MOTOR DRIVE 1P — 4P [P5-19]
CYL. SERVO
CAP. SERVO
To DC-DC CONVERTER 1E 2E [P5-24]
CAP. ACCEL
CAP. BRAKE
ATF OUT
ATF ERROR
SP/LP
TRANSIENT
TP601
TP603
TP602
B-6A IC601 HD49782 SERVO CONTROL
PROGRAM-MABLE DIVIDE
(1/30)
30Hz
PHASE ERROR DET
REF 30Hz
(11-bit)
D/A
SPEED ERROR DET.
PG SHIFT
SW25Hz SW12.5Hz GEN
PHASE ERROR DET
FG COUNT.
RESET
PG SHIFTER
ADD
SW3
SW5
R627 180K
RT601 220K-B
C618 0.015
C617 0.01
C664 0.1
C616 0.1
C615 0.1
R620 270K
C610 0.047
C611 22/6.3
R619 27K
R617 10K
R616 1M
C609 1/50
R614 10K
R615 4.7K
R613 12K
R676 10K
C608 1500P
R682 39K
R672 39K
R673 39K
R674 39K
C696 6800P
C695 6800P
C694 6800P
C697 6800P
A-1A D603 MA132WK (MD)
R604 12K
R605 1.5M
C603 4.7/16
R606 12K
C604 1500P
R607 39K
R609 1M
R601 470K
C606 4.7/25
R611 1M
R612 56K
C607 2.2/16
C662 2.2/16
R1604 12K
R688 47K
A-3A IC605 NJM2902V AMP
GND
B+
R621 270K
R622 47K
C612 0.1
R624 47K
C613 1000P
R623 47K
C614 6800P
R1611 6.8K
R687 82K
R1610 6.8K
R602 1K
R689 33K
R692 39K
R690 3.3K
R691 33K
R694 10K
A-3A Q602 UN9213 (8C)
47K
B-6B IC606 TC4S66F (C9) SW
R1606 47K
5V3a
HEAD SW4
HEAD SW3
HEAD SW2
HEAD SW1
SW12.5Hz
To PRE AMP 1H — 5H [P5-28]
SW25Hz
FSC
C.SYNC
GND
To Y 6H — 9H [P5-29]
FM ENV.
TEST
To PRE AMP 10H 11H [P5-28]
PG601
SYC 5V
TRACKING
SW25Hz
GND
FM ENV
TEST
Hi-8 SW
ADJUSTMENT TERMINAL
Hi-8 SW
TEST
SYC 5V
CS (S-ATF)
GND
To SYSTEM CONTROL 16F — 20F [P5-11]
R639 1K
R681 12K
R637 82K
C631 0.01
R640 10K
R642 10K
R643 2.2K
C629 0.022
C630 0.022
R636 510K
R635 10K
C628 47P
C627 47P
V. REF GEN
DIFF. AMP
ERROR DET.
3fH BPF
fH BPF
BAL. MOD
PB PILOT
(0~16dB)
GAIN CONT.
PILOT BPF
VIDEO DET
(0~15dB)
GAIN CONT.
SW1
REC PILOT
SW2
Lo Hi
PRE
5.95MHz OSC
R648 4.7K
B-7A IC602 XR1080 ATF
X601 5.85MHz
L601 10μ
C625 0.1
C661 0.1
R1613 5.6K
L603 10μ
C659 0.1
C622 3.3/35
R1612 6.8K
C666 39P
C665 100P
R678 4.7K
B-7A Q603 2SD2216 (YR)
PB SIG
REC PILOT
To PRE AMP 12H 13H [P5-28]
NOISE DET
To Y 14H [P5-29]
REC CONT.
CLOG
FF/REV
To SYSTEM CONTROL 21F — 23F [P5-11]
WAVEFORMS NO.
NOTE: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE
MAIN (SERVO SECTION) P.C.B
E
D
C
B
A
1
2
3
4
5
6
7
8

IC601 BLOCK DIAGRAM


ATF PILOT CONT.
SW12.5
SW25
REF. 25Hz GEN
CLOCK
DECODE
ATF DATA REQ.
ARTI. V. SYNC
ARTI. H. SYNC
V. SYNC SEPA.
REC·ON
RESET
P. ON RESET
(1/30)
PROGRAM-MABLE DIVIDE
25Hz
(11-bit)
PHASE ERROR DET
REF 25Hz
D/A
(11-bit)
SPEED ERROR DET.
D/A
1/2V. SYNC. REF. 25Hz
33~64
HEAD SW GEN
PG SHIFT
SW25Hz SW12.5Hz GEN.
PHASE ERROR DET
(11-bit)
D/A
2.5V
SW1
SW2
SW3
H. SW1
H. SW2
H. SW3
H. SW4
0.2.5.7 9.11.14.16
RESET
FG COUNT.
HEAD SYSTEM SEL.
ADD
SW11
SP/LP S/H
SW13
ATF S/H
AMP
ADD
SW7
SW6
SW5
SW4
2.5V
NTSC/PAL
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

IC602 BLOCK DIAGRAM


VR
PB PILOT ± REF. PILOT
V. REF GEN
DIFF. AMP
ERROR DET.
3fH BPF
fH BPF
SP/LP
REF
BAL. MOD
PB PILOT
(0~16dB)
GAIN CONT.
REF. PILOT
DECODE
CLOG
VIDEO DET
PILOT BPF
REC PILOT
PROGRAMMABLE COUNTER
1/58
1/50
1/36
1/40
(0~15dB)
GAIN CONT.
SW1
Lo
Hi
PRE
SW2
Lo
Hi
GND
5.95MHz OSC
SW1
VDD
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

PB	REF.			
	f1	f2	f3	f4
f1	—	fH	(4fH)	3fH
f2	fH	—	3fH	(2fH)
f3	(4fH)	3fH	—	fH
f4	3fH	(2fH)	fH	—

E

D

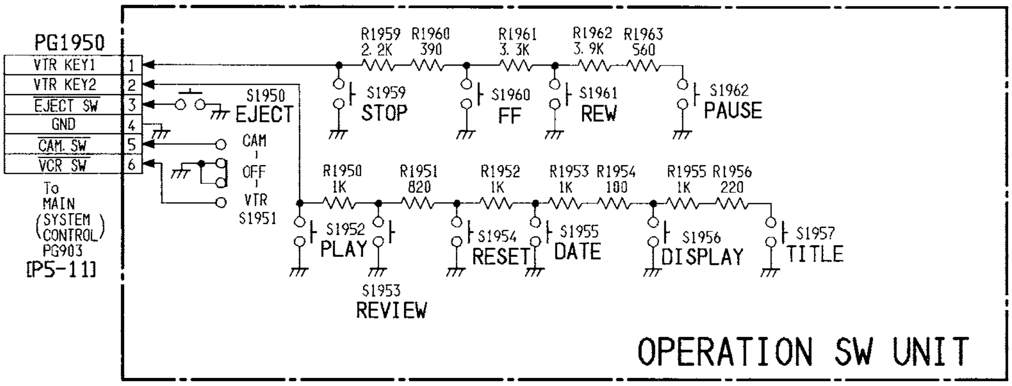
C

B

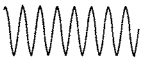
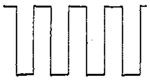
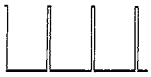
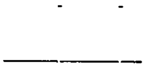
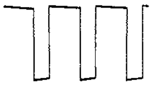
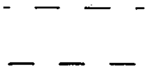
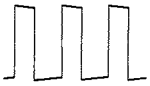
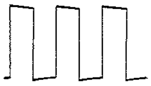
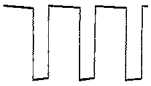
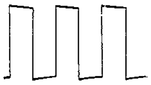
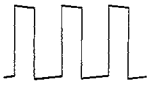
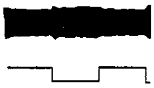
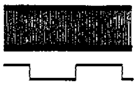
A

1 2 3 4

OPERATION SWITCH SCHEMATIC DIAGRAM

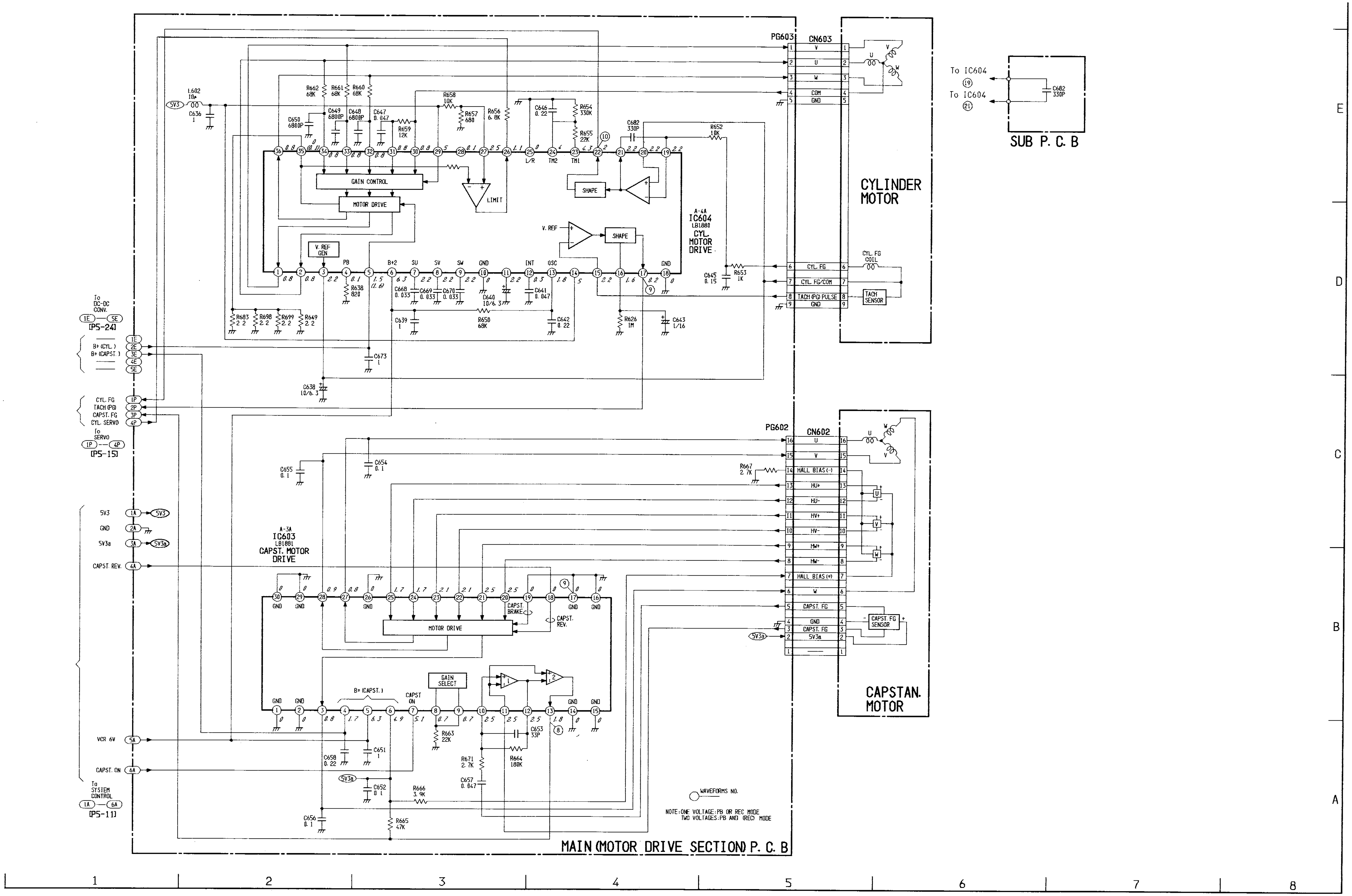

PG1950
VTR KEY1
VTR KEY2
EJECT SW
GND
CAM. SW
VCR SW
1
2
3
4
5
6
To MAIN (SYSTEM CONTROL) PG903
[P5-11]
S1950
EJECT
CAM
OFF
VTR
S1951
R1959 2.2K
R1960 390
R1961 3.3K
R1962 3.9K
R1963 560
S1959 STOP
S1960 FF
S1961 REW
S1962 PAUSE
R1950 1K
R1951 820
R1952 1K
R1953 1K
R1954 100
R1955 1K
R1956 220
S1952 PLAY
S1953 REVIEW
S1954 RESET
S1955 DATE
S1956 DISPLAY
S1957 TITLE
OPERATION SW UNIT

SERVO WAVEFORMS

1-A IC601-43 400mVp-p 0.1V/200nsec.cm REC/PLAY	8-A IC603-13 3.9Vp-p 1V/500μ sec.cm REC/PLAY
	
2-A IC601-51 4.8Vp-p 1V/20.0μ sec.cm REC/PLAY	9-A IC604-17 4.2Vp-p 1V/5.0msec.cm REC/PLAY
	
3-A IC601-61 5.5Vp-p 1V/20.0msec.cm REC/PLAY	10-A IC604-22 4.3Vp-p 1V/1.0msec.cm REC/PLAY
	
IC601-62 5.5Vp-p 1V/20.0msec.cm REC/PLAY	11-A TP601 5.3Vp-p 1V/10.0msec.cm REC/PLAY
	
5-A IC601-63 5.4Vp-p 1V/20.0msec.cm REC	12-A TP605 5.5Vp-p 1V/10.0msec.cm REC/PLAY
	
5-B IC601-63 5.4Vp-p 1V/20.0msec.cm PLAY	
	
6-B IC602-4 600mVp-p 0.2V/5.0msec.cm PLAY	
	
7-A IC602-11 2.0Vp-p 0.5V/5.0msec.cm REC/PLAY	
	

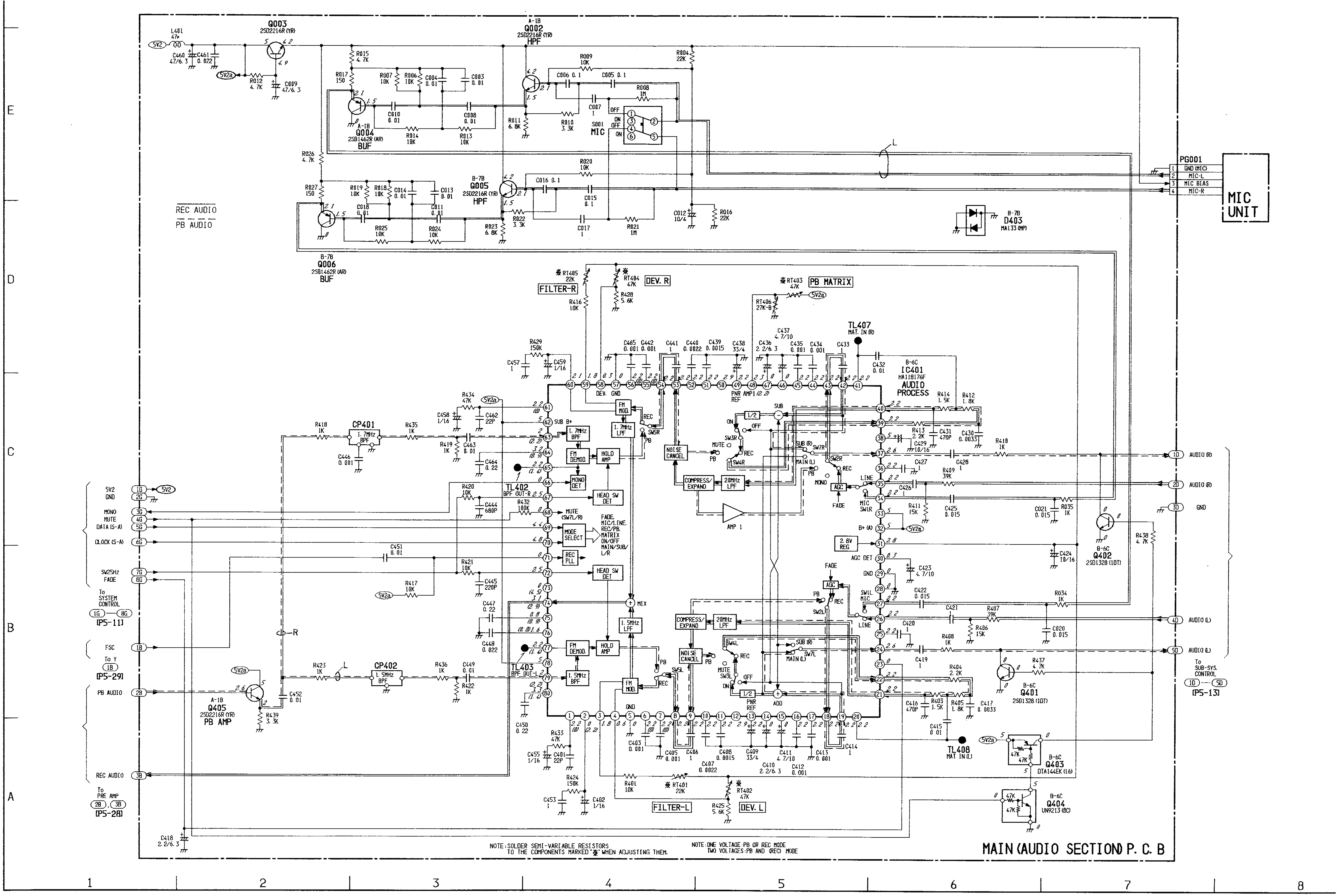
1 2 3 4

MAIN (MOTOR DRIVE SECTION) SCHEMATIC DIAGRAM



IC604
LB1880
A-4A
CYL. MOTOR DRIVE
IC603
LB1881
A-3A
CAPST. MOTOR DRIVE
GAIN CONTROL
MOTOR DRIVE
LIMIT
SHAPE
V. REF GEN
V. REF
GAIN SELECT
CAPST BRAKE
CAPST. REV.
CAPST ON
B+ (CAPST.)
PB
B+2
SU
SV
SW
GND
INT
OSC
L/R
TM2
TM1
PG603
CN603
V
U
W
COM
GND
CYL. FG
CYL. FG/COM
TACH (PG) PULSE
CYLINDER MOTOR
CYL. FG COIL
TACH SENSOR
PG602
CN602
HALL BIAS (-)
HU+
HU-
HV+
HV-
HW+
HW-
HALL BIAS (+)
CAPST. FG
5V3a
CAPST. FG SENSOR
CAPSTAN. MOTOR
To IC604 ⑲
To IC604 ㉑
C682 330P
SUB P. C. B
To DC-DC CONV.
[P5-24]
B+ (CYL.)
B+ (CAPST.)
CYL. FG
TACH (PG)
CAPST. FG
CYL. SERVO
To SERVO
[P5-15]
5V3
GND
5V3a
CAPST. REV.
VCR 6V
CAPST. ON
To SYSTEM CONTROL
[P5-11]
L602 10µ
C636 1
R662 68K
R661 68K
R660 68K
C650 6800P
C649 6800P
C648 6800P
C647 0.047
R659 12K
R658 10K
R657 680
R656 6.8K
C646 0.22
R654 330K
R655 22K
C682 330P
R652 10K
R638 820
C668 0.033
C669 0.033
C670 0.033
C640 10/6.3
C641 0.047
C645 0.15
R653 1K
R683 2.2
R698 2.2
R699 2.2
R649 2.2
C639 1
R650 68K
C642 0.22
R626 1M
C643 1/16
C673 1
C638 10/6.3
C655 0.1
C654 0.1
R667 2.7K
C658 0.22
C651 1
R663 22K
C653 33P
R671 2.7K
R664 180K
C657 0.047
C652 0.1
R666 3.9K
C656 0.1
R665 47K
WAVEFORMS NO.
NOTE: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE
MAIN (MOTOR DRIVE SECTION) P. C. B

MAIN (AUDIO SECTION) SCHEMATIC DIAGRAM



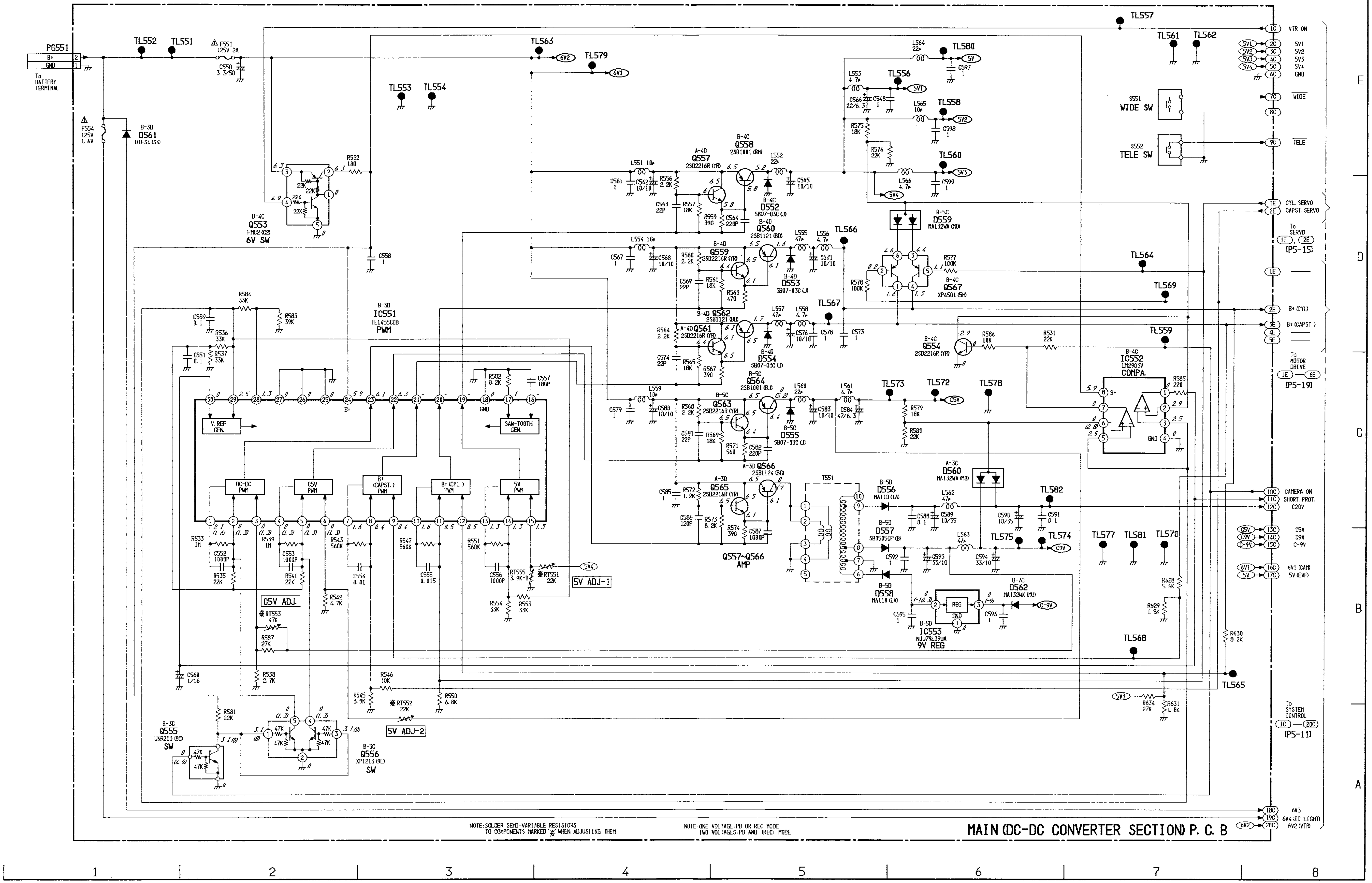
E
D
C
B
A
1
2
3
4
5
6
7
8
Q003
2SD2216R (YR)
Q002
2SD2216R (YR)
HPF
Q004
2SB1462R (AR)
BUF
Q005
2SD2216R (YR)
HPF
Q006
2SB1462R (AR)
BUF
S001
MIC
OFF
ON
REC AUDIO
PB AUDIO
PG001
GND (MIC)
MIC-L
MIC BIAS
MIC-R
MIC UNIT
D403
MA133 (MP)
RT405
FILTER-R
RT404
DEV. R
RT403
PB MATRIX
RT406
TL407
MAT. IN (R)
IC401
HA11B176F
AUDIO PROCESS
CP401
1.7MHz BPF
CP402
1.5MHz BPF
TL402
BPF OUT-R
TL403
BPF OUT-L
FM MOD
1.7MHz LPF
1.7MHz BPF
FM DEMOD
HOLD AMP
MONO DET
HEAD SW DET
MODE SELECT
REC PLL
FADE, MIC/LINE, REC/PB, MATRIX ON/OFF, MAIN/SUB/L/R
MIX
1.5MHz LPF
1.5MHz BPF
NOISE CANCEL
COMPRESS/EXPAND
20MHz LPF
AMP 1
AGC
2.8V REG
SUB
ADD
PNR AMP
REF
MUTE
SW3R
SW4R
SW5R
SW2R
SW1R
SW3L
SW4L
SW5L
SW2L
SW7L
SW1L
LINE
MIC
FADE
5V2
GND
MONO
MUTE
DATA (S-A)
CLOCK (S-A)
SW25Hz
FADE
To SYSTEM CONTROL
(1G)-(8G)
[P5-11]
FSC
To Y
(1B)
[P5-29]
PB AUDIO
REC AUDIO
To PRE AMP
(2B), (3B)
[P5-28]
Q405
2SD2216R (YR)
PB AMP
Q402
2SD1328 (1DT)
Q401
2SD1328 (1DT)
Q403
DTA144EK (16)
Q404
UN9213 (8C)
TL408
MAT IN (L)
RT401
FILTER-L
RT402
DEV. L
AUDIO (R)
AUDIO (R)
GND
AUDIO (L)
AUDIO (L)
To SUB-SYS. CONTROL
(1D)-(5D)
[P5-13]

NOTE: SOLDER SEMI-VARIABLE RESISTORS TO THE COMPONENTS MARKED "※" WHEN ADJUSTING THEM.

NOTE: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE

MAIN (AUDIO SECTION) P. C. B

MAIN (DC-DC CONVERTER SECTION) SCHEMATIC DIAGRAM

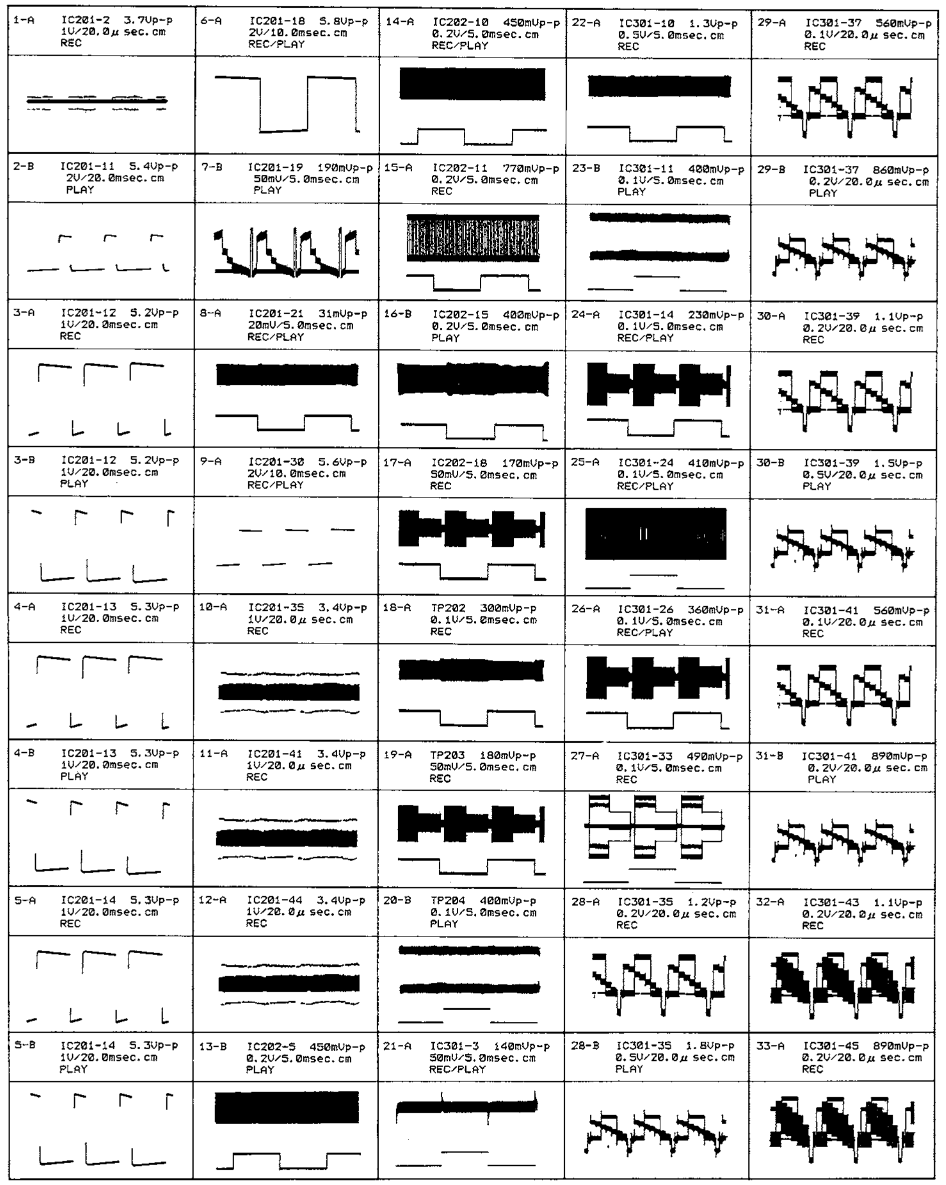

PG551
B+
GND
To BATTERY TERMINAL
F551 125V 2A
F554 125V 1.6V
D561 D1FS4 (S4)
Q553 FMC2 (C2) 6V SW
IC551 TL1455CDB PWM
V. REF GEN.
SAW-TOOTH GEN.
DC-DC PWM
C5V PWM
B+ (CAPST.) PWM
B+ (CYL.) PWM
5V PWM
C5V ADJ.
5V ADJ-1
5V ADJ-2
Q555 UN9213 (8C) SW
Q556 XP1213 (9L) SW
Q557 2SD2216R (YR)
Q558 2SB1001 (BH)
Q559 2SD2216R (YR)
Q560 2SB1121 (BD)
Q561 2SD2216R (YR)
Q562 2SB1121 (BD)
Q563 2SD2216R (YR)
Q564 2SB1001 (BJ)
Q565 2SD2216R (YR)
Q566 2SB1124 (BG)
Q557~Q566 AMP
D552 SB07-03C (J)
D553 SB07-03C (J)
D554 SB07-03C (J)
D555 SB07-03C (J)
D556 MA110 (1A)
D557 SB0505CP (B)
D558 MA110 (1A)
D559 MA132WA (MO)
D560 MA132WA (MO)
D562 MA132WK (MJ)
Q554 2SD2216R (YR)
Q567 XP4501 (5H)
IC552 LM2903V COMPA.
IC553 NJU79L09UA 9V REG
T551
S551 WIDE SW
S552 TELE SW
VTR ON
5V1 5V2 5V3 5V4 GND
WIDE
TELE
CYL. SERVO
CAPST. SERVO
To SERVO (1E), (2E) [P5-15]
B+ (CYL)
B+ (CAPST)
To MOTOR DRIVE (1E)—(6E) [P5-19]
CAMERA ON
SHORT. PROT.
C20V
C5V C9V C-9V
6V1 (CAM)
5V (EVF)
To SYSTEM CONTROL (1C)—(20C) [P5-11]
6V3
6V4 (DC LIGHT)
6V2 (VTR)
1 2 3 4 5 6 7 8
A B C D E

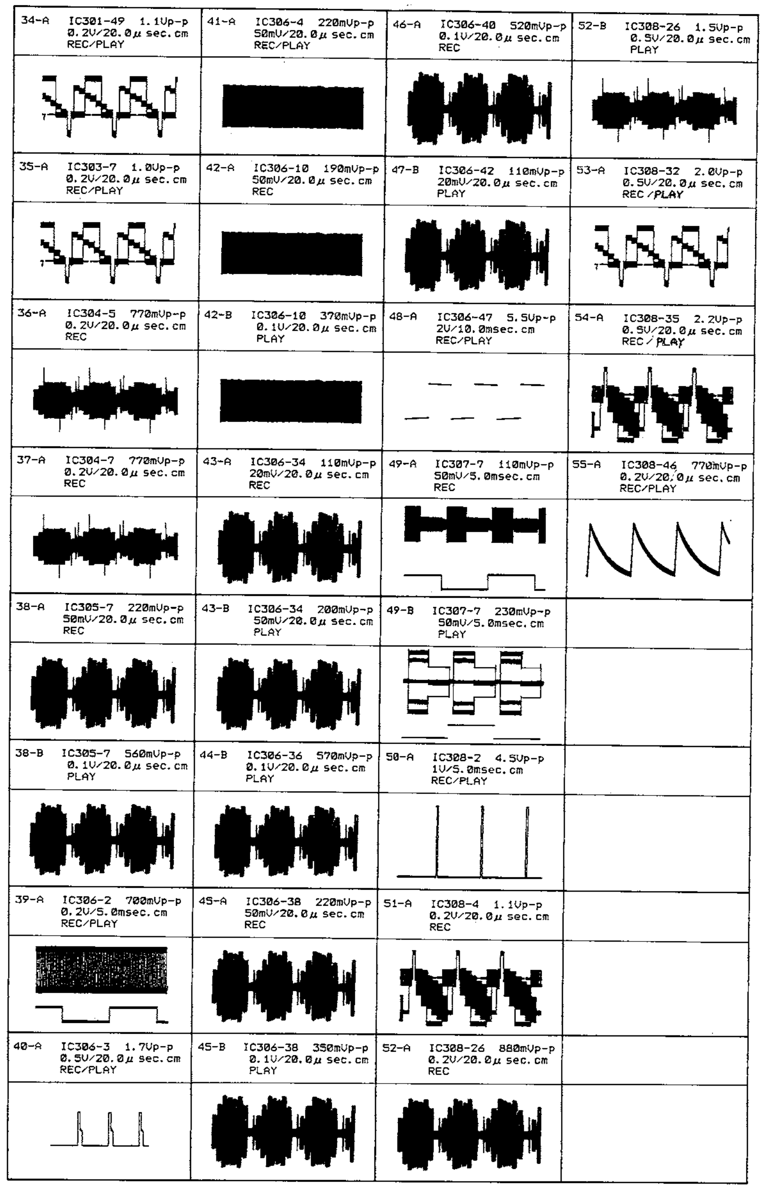
NOTE: SOLDER SEMI-VARIABLE RESISTORS TO COMPONENTS MARKED "※" WHEN ADJUSTING THEM.

NOTE: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE

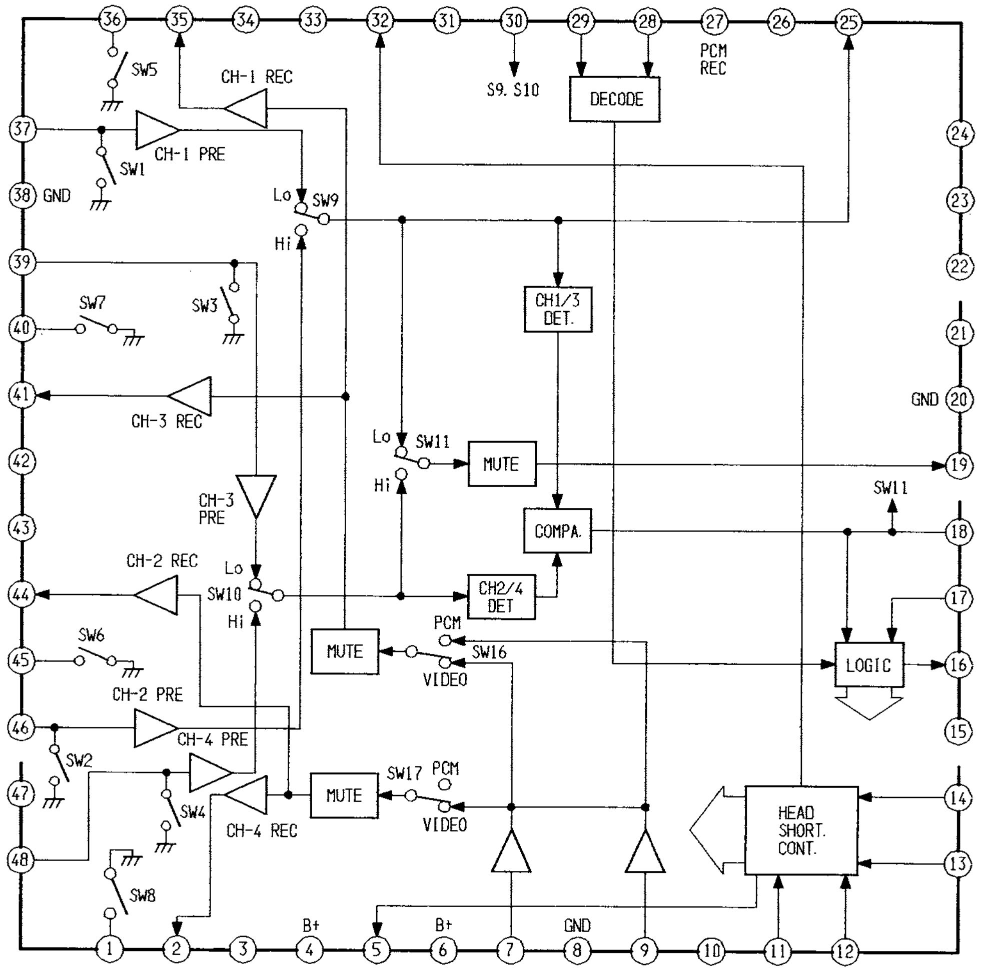
MAIN (DC-DC CONVERTER SECTION) P. C. B

VIDEO WAVEFORMS





IC201 BLOCK DIAGRAM


SW5
CH-1 REC
S9. S10
DECODE
PCM
REC
CH-1 PRE
SW1
GND
Lo
SW9
Hi
SW7
SW3
CH1/3
DET.
CH-3 REC
GND
Lo
SW11
Hi
MUTE
SW11
CH-3
PRE
COMPA.
CH-2 REC
Lo
SW10
Hi
CH2/4
DET
SW6
MUTE
PCM
SW16
VIDEO
LOGIC
CH-2 PRE
CH-4 PRE
SW2
SW4
CH-4 REC
MUTE
SW17
PCM
VIDEO
HEAD
SHORT.
CONT.
SW8
B+
B+
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
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41
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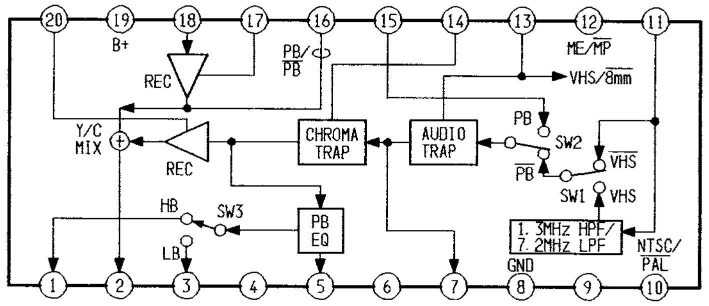
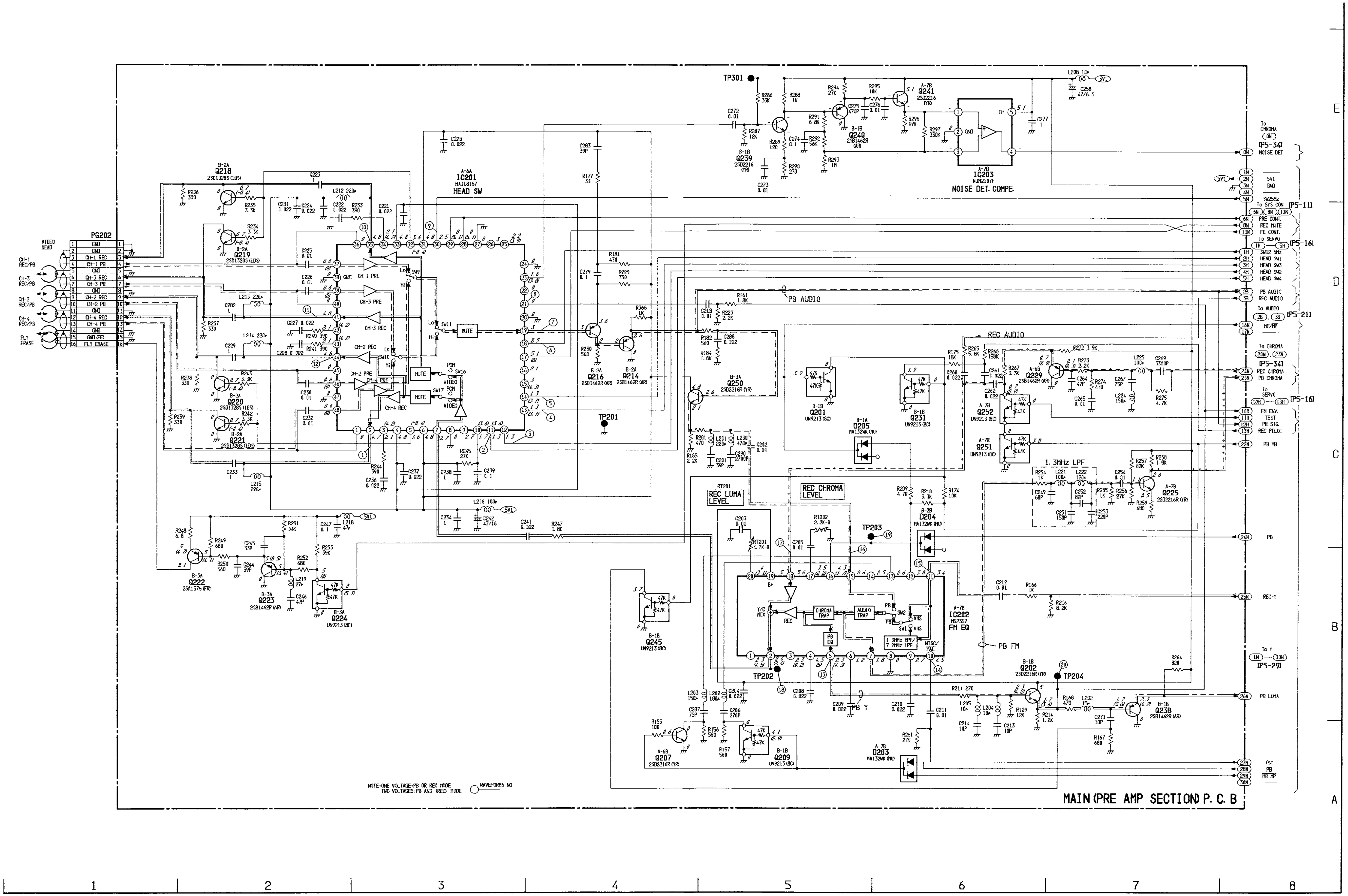
47
48

IC202 BLOCK DIAGRAM

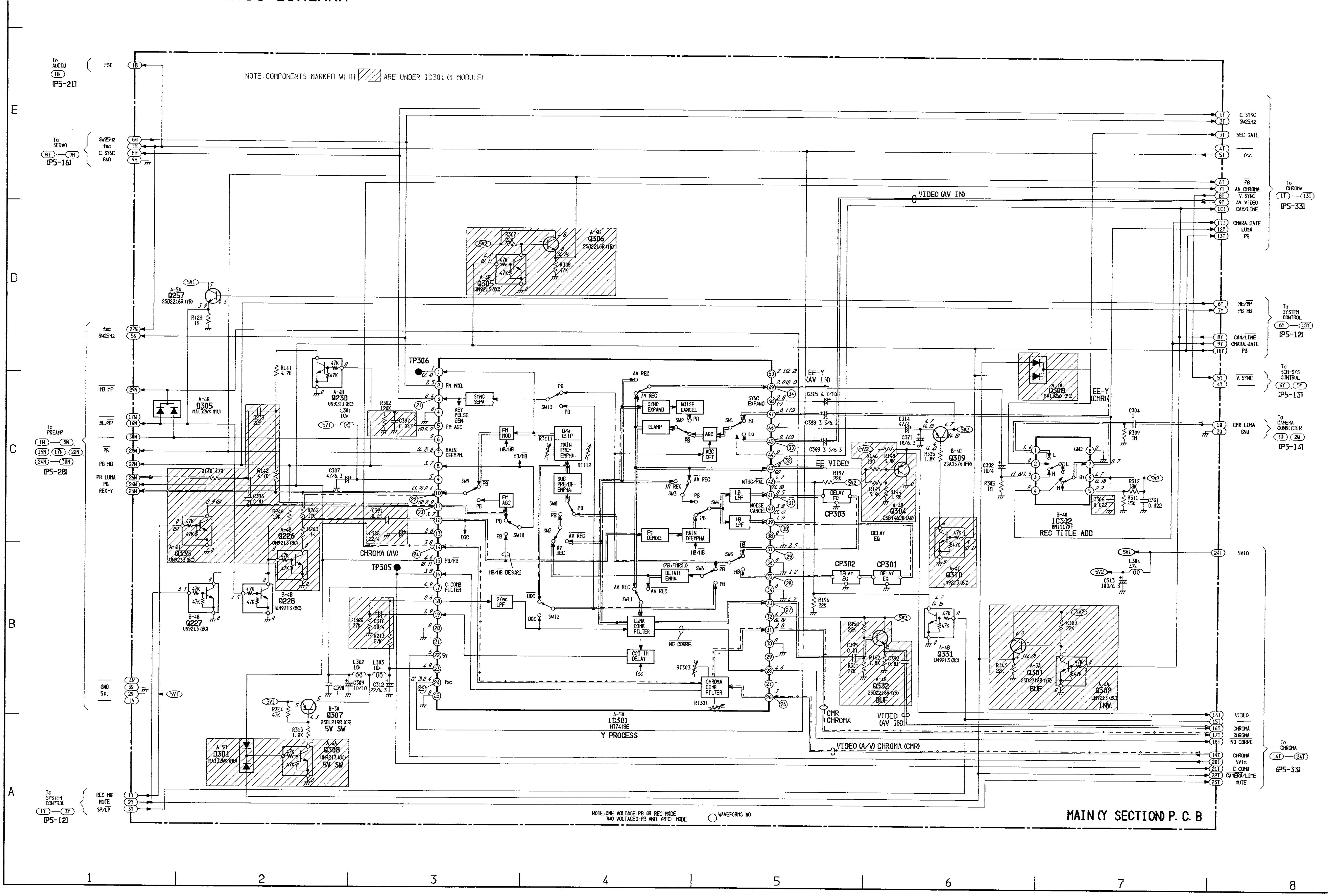

B+
REC
PB/
PB
ME/MP
VHS/8mm
Y/C
MIX
REC
CHROMA
TRAP
AUDIO
TRAP
PB
SW2
PB
VHS
SW1
VHS
HB
SW3
LB
PB
EQ
1.3MHz HPF/
7.2MHz LPF
GND
NTSC/
PAL
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

MAIN (PRE AMP SECTION) SCHEMATIC DIAGRAM

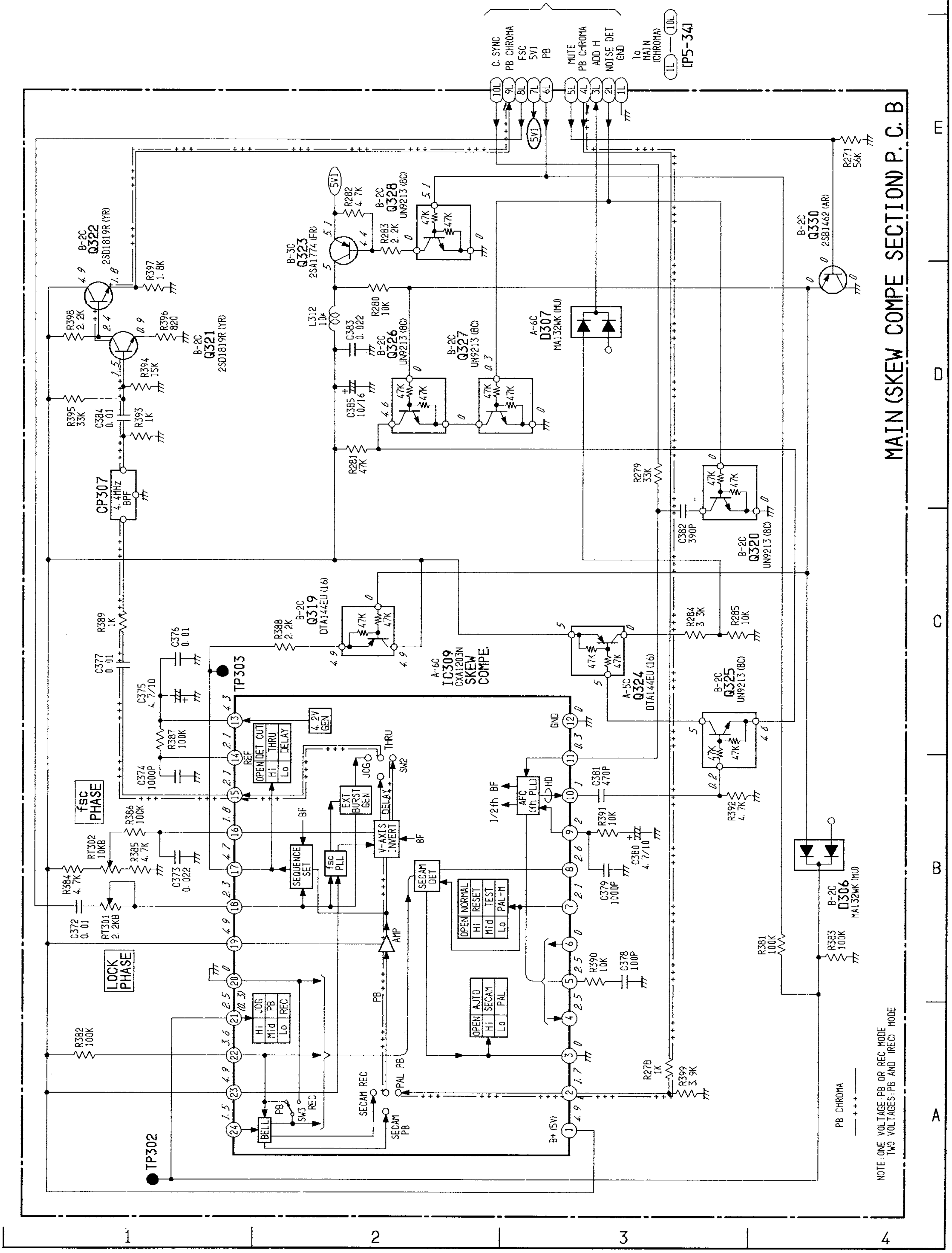


PG202
VIDEO HEAD
CH-1 REC/PB
CH-3 REC/PB
CH-2 REC/PB
CH-4 REC/PB
FLY ERASE
GND
CH-1 REC
CH-1 PB
CH-3 REC
CH-3 PB
CH-2 REC
CH-2 PB
CH-4 REC
CH-4 PB
GND (FE)
FLY ERASE
Q218 2SD1328S (DS)
Q219 2SD1328S (DS)
Q220 2SD1328S (DS)
Q221 2SD1328S (DS)
IC201 HA118167 HEAD SW
CH-1 PRE
CH-3 PRE
CH-3 REC
CH-2 REC
CH-2 PRE
CH-4 PRE
CH-4 REC
MUTE
PCM
VIDEO
SW9
SW10
SW11
SW16
SW17
Q216 2SB1462R (AR)
Q214 2SB1462R (AR)
Q250 2SD2216R (YR)
TP201
TP301
Q239 2SD2216 (YR)
Q240 2SB1462R (AR)
Q241 2SD2216 (YR)
IC203 NJM2107F NOISE DET. COMPE.
PB AUDIO
REC AUDIO
Q201 UN9213 (BC)
Q231 UN9213 (BC)
D205 MA132WK (MU)
Q229 2SB1462R (AR)
Q252 UN9213 (BC)
Q251 UN9213 (BC)
1.3MHz LPF
Q225 2SD2216R (YR)
REC LUMA LEVEL
REC CHROMA LEVEL
TP203
D204 MA132WK (MU)
IC202 M52357 FM EQ
Y/C MIX
REC
CHROMA TRAP
AUDIO TRAP
PB EQ
1.3MHz HPF/ 7.2MHz LPF
NTSC/ PAL
VHS
PB FM
TP202
TP204
Q202 2SD2216R (YR)
Q238 2SB1462R (AR)
Q207 2SD2216R (YR)
Q209 UN9213 (BC)
D203 MA132WK (MU)
Q245 UN9213 (BC)
Q222 2SA1576 (FR)
Q223 2SB1462R (AR)
Q224 UN9213 (BC)
5V1
PB Y
To CHROMA (ON) [P5-34] NOISE DET
5V1 GND
SW25Hz
To SYS.CON. [P5-11]
PRE CONT.
REC MUTE
FE CONT.
To SERVO [P5-16]
SW12.5Hz
HEAD SW1
HEAD SW3
HEAD SW2
HEAD SW4
PB AUDIO
REC AUDIO
To AUDIO [P5-21]
HE/HP
To CHROMA [P5-34]
REC CHROMA
PB CHROMA
To SERVO [P5-16]
FM ENV.
TEST
PB SIG.
REC PILOT
PB HB
PB
REC-Y
To Y [P5-29]
PB LUMA
fsc
PB
HB HP
NOTE: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE
WAVEFORMS NO.
MAIN (PRE AMP SECTION) P.C.B
A
B
C
D
E
1
2
3
4
5
6
7
8

MAIN (Y SECTION) SCHEMATIC DIAGRAM

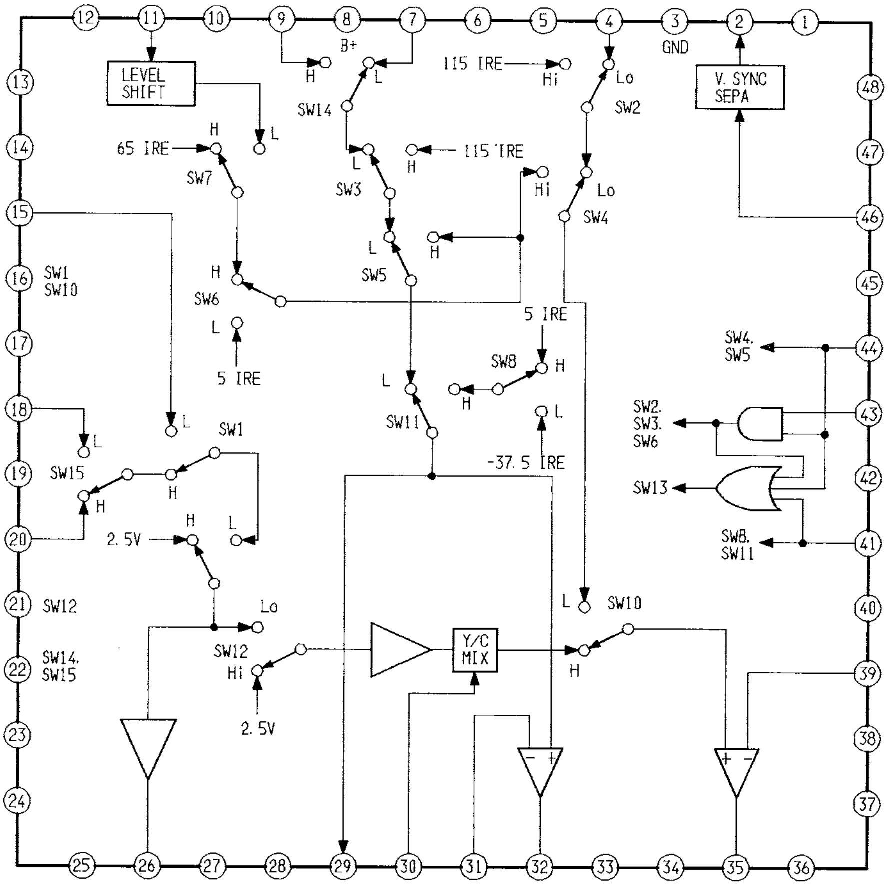

NOTE: COMPONENTS MARKED WITH ▨ ARE UNDER IC301 (Y-MODULE)
To AUDIO 1B (P5-21)
FSC
To SERVO 6H — 9H (P5-16)
SW25Hz
fsc
C. SYNC
GND
A-5A Q257 2SD2216R (TR)
R128 1K
fsc
SW25Hz
HB MP
A-6B D305 MA132WK (TX)
To PREAMP 1N — 5N, 16N, 17N, 22N, 24N — 30N (P5-28)
HE/MP
PB
PB HB
PB LUMA
PB
REC-Y
A-4B Q335 UN9213 (BC)
A-4B Q226 UN9213 (BC)
B-4B Q227 UN9213 (BC)
B-4B Q228 UN9213 (BC)
A-4B Q230 UN9213 (BC)
GND
5VL
A-5B D301 MA132WK (TX)
B-3A Q307 2SB1219R (TR) 5V SW
A-4A Q308 UN9213 (BC) 5V SW
To SYSTEM CONTROL 1Y — 3Y (P5-12)
REC HB
MUTE
SP/LP
A-4B Q306 2SD2216R (TR)
A-4B Q305 UN9213 (BC)
TP306
TP305
CHROMA (AV)
FM MOD
KEY PULSE GEN
FM AGC
MAIN DEEMPH
C. COMB FILTER
PB/PB
SYNC SEPA
FM MOD
FM AGC
D/W CLIP
MAIN PRE-EMPHA.
SUB PRE/DE-EMPHA.
FM DEMOD
MAIN DEEMPHA
HB/HB DESCRI
2fsc LPF
LUMA COMB FILTER
CCD 1H DELAY
NO CORRE
CHROMA COMB FILTER
SYNC EXPAND
NOISE CANCEL
CLAMP
AGC
AGC DET
LB LPF
HB LPF
NOISE CANCEL
DETAIL ENHA
NTSC/PAL
A-5A IC301 HT7418E Y PROCESS
EE-Y (AV IN)
EE VIDEO
DELAY EQ CP303
DELAY EQ
CP302
CP301
A-4B Q304 2SB1462R (TR)
B-4C Q309 2SA1576 (TR)
A-4C Q310 UN9213 (BC)
A-4B Q331 UN9213 (BC)
A-4B Q332 2SD2216R (TR) BUF
A-6A D308 MA132WK (TX)
EE-Y (CMR)
B-4A IC302 MM1117XF REC TITLE ADD
A-5A Q301 2SD2216R (TR) BUF
A-4A Q302 UN9213 (BC) INV.
VIDEO (AV IN)
CMR CHROMA
VIDEO (AV IN)
VIDEO (A/V) CHROMA (CMR)
C. SYNC
SW25Hz
REC GATE
fsc
PB
AV CHROMA
V. SYNC
AV VIDEO
CAM/LINE
CHARA DATE
LUMA
PB
To CHROMA 1T — 13T (P5-33)
HE/MP
PB HB
To SYSTEM CONTROL 6Y — 10Y (P5-12)
CAM/LINE
CHARA DATE
PB
V. SYNC
To SUB-SYS CONTROL 4Y 5Y (P5-13)
CMR LUMA
GND
To CAMERA CONNECTER 1Q 2Q (P5-14)
5V10
VIDEO
CHROMA
CHROMA
NO CORRE
CHROMA
5V1a
C. COMB
CAMERA/LINE
MUTE
To CHROMA 14T — 24T (P5-33)
NOTE: ONE VOLTAGE: PB OR REC MODE TWO VOLTAGES: PB AND (REC) MODE
○ WAVEFORMS NO.
MAIN (Y SECTION) P. C. B

MAIN (SKEW COMPE. SECTION) SCHEMATIC DIAGRAM



C. SYNC
PB CHROMA
FSC
5V1
PB
MUTE
PB CHROMA
ADD H
NOISE DET
GND
To MAIN (CHROMA)
1L
10L
[P5-34]
MAIN (SKEW COMPE SECTION) P. C. B
E
D
C
B
A
1
2
3
4
Q322 2SD1819R (YR)
Q321 2SD1819R (YR)
Q323 2SA1774 (FR)
Q328 UN9213 (BC)
Q326 UN9213 (BC)
Q327 UN9213 (BC)
Q330 2SB1462 (AR)
D307 MA132WK (MU)
Q320 UN9213 (BC)
Q319 DTA144EU (16)
Q324 DTA144EU (16)
Q325 UN9213 (BC)
D306 MA132WK (MU)
CP307 4.4MHz BPF
IC309 CXA1203N SKEW COMPE.
TP303
TP302
fsc PHASE
LOCK PHASE
RT302 10KB
RT301 2.2KB
4.2V GEN
OPEN DET OUT
Hi THRU
Lo DELAY
REF
THRU
SW2
JOG
EXT BURST GEN
DELAY
V-AXIS INVERT
BF
SEQUENCE SET
fsc PLL
AMP
SECAM DET
AFC (fh PLL)
HD
1/2fh BF
OPEN NORMAL
Hi RESET
Mid TEST
Lo PAL-M
OPEN AUTO
Hi SECAM
Lo PAL
Hi JOG
Mid PB
Lo REC
BELL
PB
SW3
REC
SECAM REC
SECAM PB
PAL PB
B+ (5V)
GND
PB CHROMA
NOTE: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE

IC306 BLOCK DIAGRAM



LEVEL SHIFT
V. SYNC SEPA
GND
B+
115 IRE
65 IRE
115 IRE
5 IRE
5 IRE
-37.5 IRE
2.5V
2.5V
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW10
SW11
SW12
SW14
SW15
SW1 SW10
SW12
SW14, SW15
SW4, SW5
SW2, SW3, SW6
SW13
SW8, SW11
Y/C MIX
H
L
Hi
Lo
1
2
3
4
5
6
7
8
9
10
11
12
13
14
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16
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21
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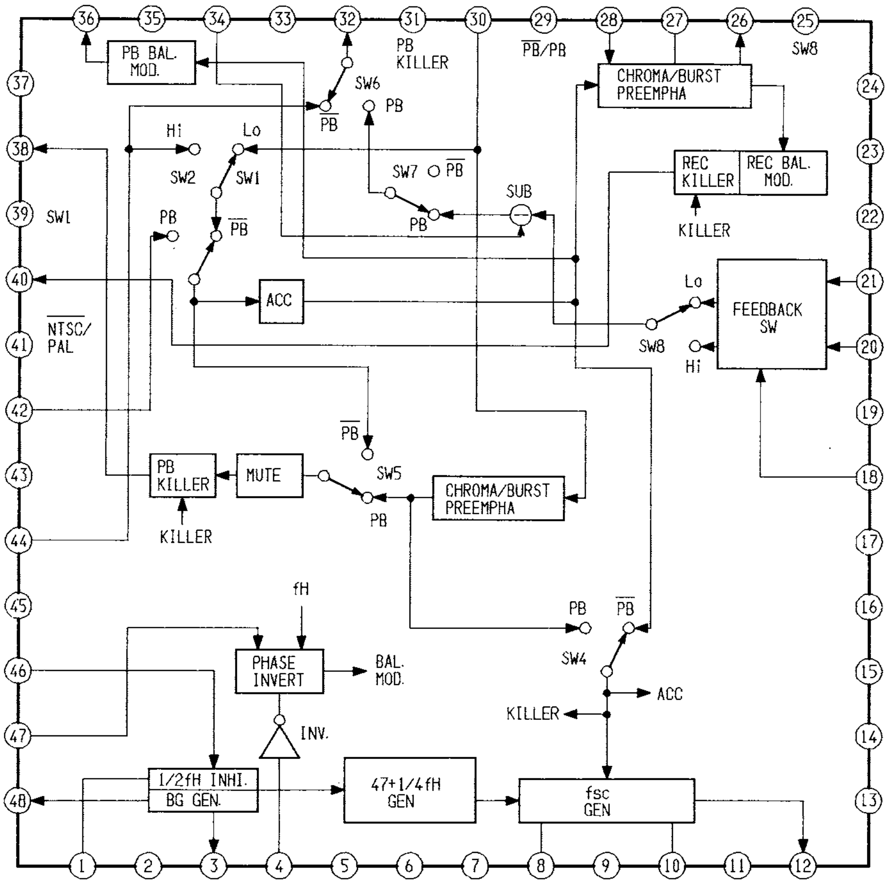
46
47
48

IC308 BLOCK DIAGRAM



PB BAL. MOD.
PB KILLER
PB/PB
SW8
CHROMA/BURST PREEMPHA
SW6
PB
PB
REC KILLER
REC BAL. MOD.
KILLER
Hi
Lo
SW2
SW1
SW7
SUB
SW1
NTSC/PAL
ACC
FEEDBACK SW
SW8
PB
KILLER
MUTE
SW5
CHROMA/BURST PREEMPHA
fH
PHASE INVERT
BAL. MOD.
INV.
SW4
ACC
KILLER
1/2fH INHI.
BG GEN.
47+1/4fH GEN
fsc GEN
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
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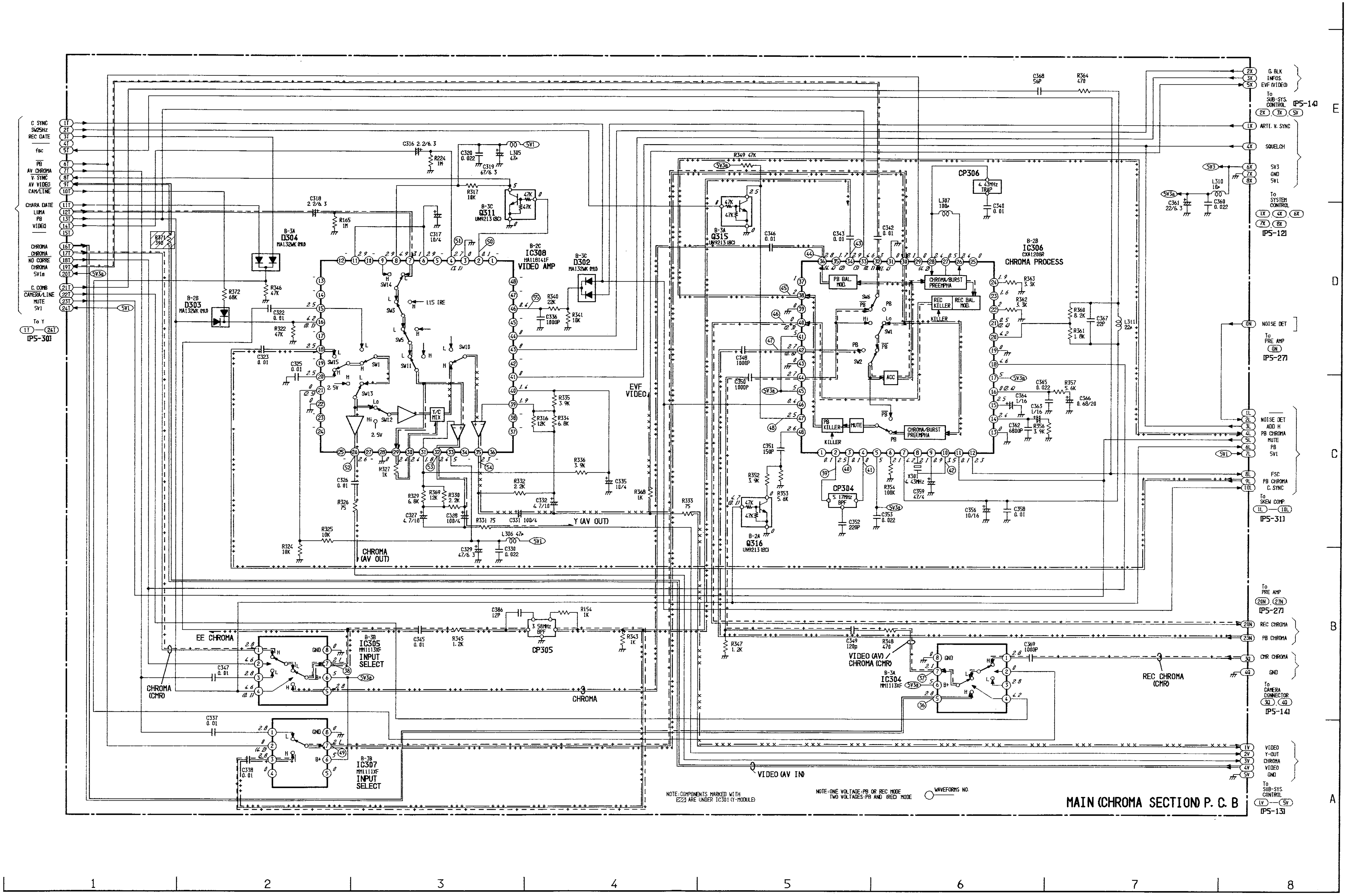
48

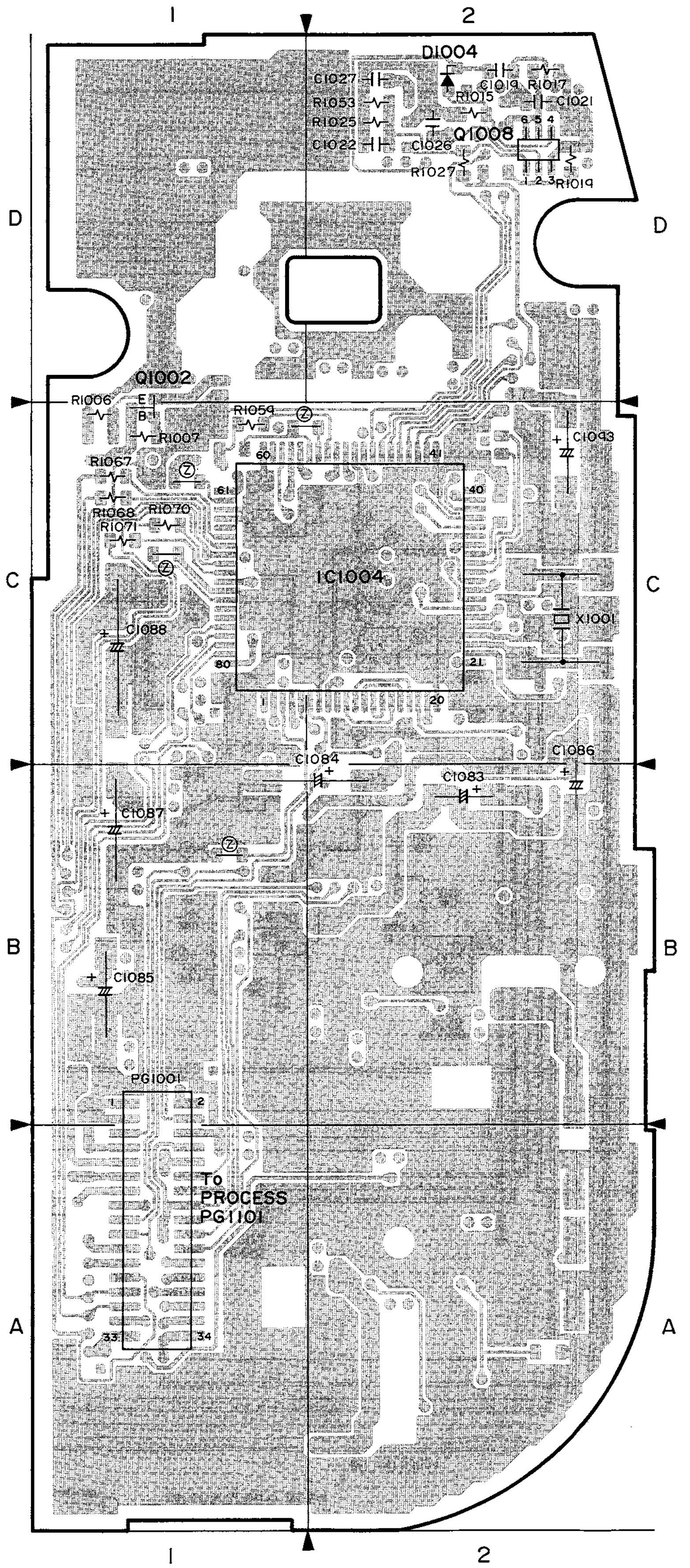
E
D
C
B
A

1
2
3
4

MAIN (CHROMA SECTION) SCHEMATIC DIAGRAM

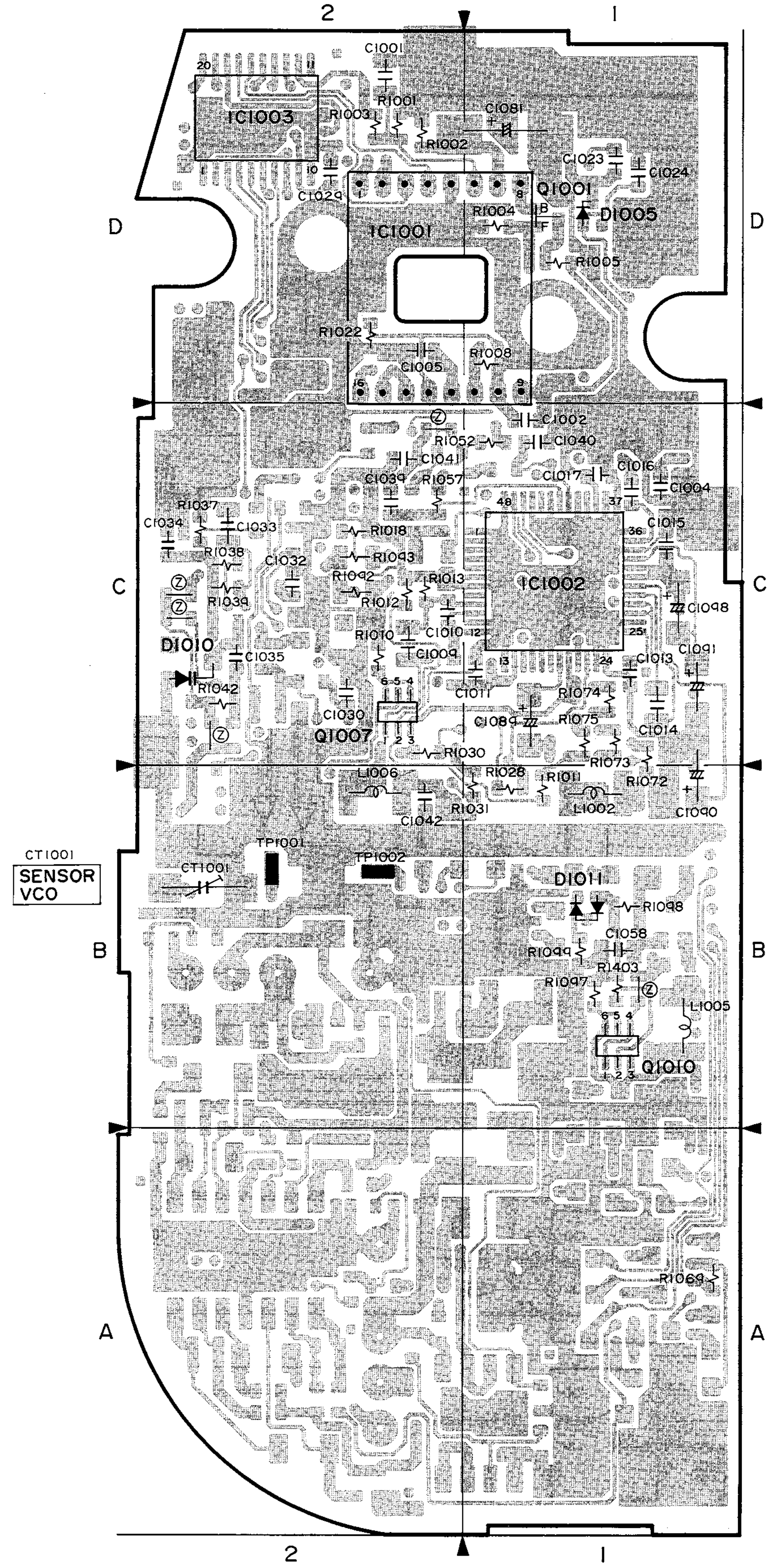

C SYNC
SW25Hz
REC GATE
fsc
PB
AV CHROMA
V. SYNC
AV VIDEO
CAM/LINE
CHARA DATE
LUMA
PB
VIDEO
CHROMA
CHROMA
NO CORRE
CHROMA
5V1a
C. COMB
CAMERA/LINE
MUTE
5V1
To Y
[P5-30]
B-3A
D304
MA132WK (M.I)
B-2B
D303
MA132WK (M.I)
R372 68K
R346 47K
R371 390
B-3C
Q311
UN9213 (BC)
B-2C
IC308
MA118141F
VIDEO AMP
B-3C
D302
MA132WK (M.I)
SW14
SW3
SW5
SW11
SW10
SW15
SW1
SW13
SW12
Y/C MIX
L15 IRE
2.5V
Y (AV OUT)
CHROMA (AV OUT)
EVF VIDEO
B-3A
Q315
UN9213 (BC)
CP306
4.43MHz TRAP
B-2B
IC306
CXA1200R
CHROMA PROCESS
PB BAL. MOD.
CHROMA/BURST PREEMPHA
REC KILLER
REC BAL. MOD.
KILLER
SW6
SW1
SW2
ACC
PB KILLER
MUTE
CHROMA/BURST PREEMPHA
B-2A
Q316
UN9213 (BC)
CP304
5.17MHz BPF
X301 4.43MHz
EE CHROMA
B-3B
IC305
MM1113XF
INPUT SELECT
CHROMA (CMR)
CP305
3.58MHz BPF
CHROMA
B-3B
IC307
MM1111XF
INPUT SELECT
VIDEO (AV) / CHROMA (CMR)
B-3A
IC304
MM1113XF
REC CHROMA (CMR)
VIDEO (AV IN)
G BLK
INFOS.
EVF (VIDEO)
To SUB-SYS. CONTROL
[P5-14]
ARTI. V. SYNC
SQUELCH
5V3
GND
5V1
To SYSTEM CONTROL
[P5-12]
NOISE DET
To PRE AMP
[P5-27]
NOISE DET
ADD H
PB CHROMA
MUTE
PB
5V1
FSC
PB CHROMA
C. SYNC
To SKEW COMP
[P5-31]
To PRE AMP
[P5-27]
REC CHROMA
PB CHROMA
CMR CHROMA
GND
To CAMERA CONNECTOR
[P5-14]
VIDEO
Y-OUT
CHROMA
VIDEO
GND
To SUB-SYS. CONTROL
[P5-13]
NOTE: COMPONENTS MARKED WITH ▨ ARE UNDER IC301 (Y-MODULE)
NOTE: ONE VOLTAGE: PB OR REC MODE
TWO VOLTAGES: PB AND (REC) MODE
○ WAVEFORMS NO.
MAIN (CHROMA SECTION) P. C. B
A
B
C
D
E
1
2
3
4
5
6
7
8

SENSOR CIRCUIT BOARD DIAGRAM


1
2
D
C
B
A
D1004
C1027
R1053
R1025
C1022
C1019
R1017
R1015
C1021
C1026
Q1008
R1027
R1019
Q1002
R1006
R1059
R1007
R1067
R1068
R1070
R1071
C1043
IC1004
X1001
C1088
C1084
C1083
C1086
C1087
C1085
PG1001
To PROCESS PG1101
60
41
61
40
80
21
20
1
2
33
34

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

SENSOR P.C.B (SIDE A)
〔PATTERN No.155084 – 1〕


2
1
D
C
B
A
CT1001
SENSOR VCO
C1001
IC1003
R1001
R1003
C1081
R1002
C1023
C1024
C1029
IC1001
Q1001
R1004
D1005
R1005
R1022
C1005
R1008
C1002
R1052
C1040
C1041
C1039
R1057
C1016
C1017
C1004
R1037
C1034
C1033
R1018
R1043
C1015
R1038
C1032
R1042
R1013
IC1002
R1039
R1012
C1098
R1010
C1010
D1010
C1035
C1009
C1013
C1091
R1042
C1030
C1011
R1074
Q1007
C1089
R1075
C1014
R1030
R1073
L1006
R1028
R1011
R1072
R1031
L1002
C1042
C1090
TP1001
TP1002
CT1001
D1011
R1098
C1058
R1099
R1403
R1097
L1005
Q1010
R1069

SENSOR P.C.B (SIDE B)

IDENTIFICATION OF PARTS LOCATION

SENSOR P.C.B

Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location
C1001	B-2D	C1093	A-2C	R1030	B-2C
C1002	B-1C	C1098	B-1C	R1031	B-1B
C1004	B-1C	CT1001	B-2B	R1037	B-2C
C1005	B-2D	D1004	A-2D	R1038	B-2C
C1009	B-2C	D1005	B-1D	R1039	B-2C
C1010	B-2C	D1010	B-2C	R1042	B-2C
C1011	B-1C	D1011	B-1B	R1052	B-1C
C1013	B-1C	IC1001	B-2D	R1053	A-2D
C1014	B-1C	IC1002	B-1C	R1057	B-2C
C1015	B-1C	IC1003	B-2D	R1059	A-1C
C1016	B-1C	IC1004	A-2C	R1067	A-1C
C1017	B-1C	L1002	B-1B	R1068	A-1C
C1019	A-2D	L1005	B-1B	R1069	B-1A
C1021	A-2D	L1006	B-2B	R1070	A-1C
C1022	A-2D	PG1001	A-1A	R1071	A-1C
C1023	B-1D	Q1001	B-1D	R1072	B-1C
C1024	B-1D	Q1002	A-1C	R1073	B-1C
C1026	A-2D	Q1007	B-2C	R1074	B-1C
C1027	A-2D	Q1008	A-2D	R1075	B-1C
C1029	B-2D	Q1010	B-1B	R1092	B-2C
C1030	B-2C	R1001	B-2D	R1093	B-2C
C1032	B-2C	R1002	B-2D	R1097	B-1B
C1033	B-2C	R1003	B-2D	R1098	B-1B
C1034	B-2C	R1004	B-1D	R1099	B-1B
C1035	B-2C	R1005	B-1D	R1403	B-1B
C1039	B-2C	R1006	A-1C	TP1001	B-2B
C1040	B-1C	R1007	A-1C	TP1002	B-2B
C1041	B-2C	R1008	B-1D	X1001	A-2C
C1042	B-2B	R1010	B-2C		
C1058	B-1B	R1011	B-1B		
C1081	B-1D	R1012	B-2C		
C1083	A-2B	R1013	B-2C		
C1084	A-2B	R1015	A-2D		
C1085	A-1B	R1017	A-2D		
C1086	A-2B	R1018	B-2C		
C1087	A-1B	R1019	A-2D		
C1088	A-1C	R1022	B-2D		
C1089	B-1C	R1025	A-2D		
C1090	B-1B	R1027	A-2D		
C1091	B-1C	R1028	B-1B		

PROCESS P.C.B

Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location
C1101	A-2A	C1151	A-2A	L1106	B-2C	R1148	B-1C	R1198	A-1C
C1103	B-2A	C1152	A-1A	L1107	B-2C	R1149	B-2C	R1195	A-1C
C1104	B-2A	C1181	A-2A	L1108	A-2B	R1150	B-2C	R1200	A-1B
C1105	B-2A	C1182	A-2A	L1109	B-2C	R1151	B-2C	R1201	A-1B
C1106	B-2A	C1183	A-2B	PG1101	A-2A	R1152	B-2B	R1202	A-1B
C1107	B-2A	C1184	B-1C	PG1102	A-1C	R1153	B-2B	R1203	A-1B
C1109	B-2A	C1185	A-2B	PG1103	B-1C	R1154	B-2B	R1204	A-1B
C1110	B-1A	C1186	A-2B	Q1101	A-2A	R1155	B-2B	R1205	A-1B
C1111	B-2A	C1187	A-2B	Q1102	B-1B	R1156	B-2B	R1206	A-1A
C1117	B-1C	C1188	A-2C	Q1105	A-2C	R1157	A-2A	R1207	B-1A
C1118	B-2C	C1189	A-2B	Q1106	B-1A	R1158	A-2A	R1208	A-1A
C1119	A-1B	C1190	A-2C	Q1107	B-2B	R1159	A-2B	R1209	B-1C
C1120	A-1B	C1191	A-2C	Q1108	B-1A	R1160	A-2B	R1210	B-1C
C1121	B-1C	C1192	A-2B	Q1109	B-1C	R1161	A-2A	R1212	B-1B
C1122	A-1B	C1193	A-2C	Q1110	A-1C	R1162	B-1B	R1213	A-1A
C1123	A-2A	C1194	A-2B	R1101	A-2A	R1163	B-1A	R1214	A-1A
C1124	A-1A	C1195	A-2B	R1102	A-1A	R1164	B-1B	R1215	A-2A
C1125	A-2A	C1196	A-2C	R1104	B-1B	R1166	B-1B	R1216	A-1C
C1126	A-2B	CP1101	A-1C	R1105	B-1A	R1167	B-1A	R1219	A-1A
C1127	B-2B	CP1102	A-1C	R1106	B-1A	R1168	B-1B	R1221	B-1B
C1128	B-2C	D1101	A-1A	R1107	B-2A	R1170	B-2C	R1222	B-1A
C1129	A-2B	D1102	B-1C	R1108	B-2A	R1171	B-2B	R1223	B-1B
C1130	B-2C	D1103	A-1B	R1114	B-1A	R1174	B-1A	R1224	B-1A
C1134	B-2C	D1104	A-1C	R1115	B-1A	R1176	A-1B	R1225	B-1A
C1135	A-1C	D1106	B-2B	R1116	B-2A	R1177	A-1B	R1226	B-1C
C1136	A-1C	D1107	B-2C	R1121	B-2A	R1178	A-2C	R1227	B-1C
C1137	A-2C	IC1101	B-1A	R1123	B-2A	R1179	A-2C	R1228	B-1C
C1138	A-1C	IC1102	B-2B	R1124	A-1B	R1180	A-2C	R1229	B-1C
C1139	A-1C	IC1103	B-1B	R1130	B-2A	R1181	A-2C	R1230	B-1C
C1140	A-1C	IC1104	B-1C	R1132	B-2A	R1182	A-2C	R1231	A-1C
C1141	A-1B	IC1105	A-1B	R1133	B-2B	R1183	A-2C	R1232	B-1C
C1142	A-1C	IC1106	A-1B	R1134	B-2B	R1184	A-1C	R1233	B-1B
C1143	A-1B	IC1107	B-1A	R1135	B-1C	R1185	A-1C	R1235	A-2C
C1144	A-1B	IC1108	A-1A	R1137	A-1B	R1186	A-1C	R1236	A-1C
C1145	A-1B	IC1110	A-2B	R1138	B-1C	R1187	A-2C	R1240	B-1A
C1146	A-1B	L1101	B-2A	R1140	B-1C	R1188	A-2C	TP1102	A-1C
C1147	A-1B	L1102	A-2A	R1144	B-1C	R1190	A-1C	TP1103	A-1B
C1148	A-2A	L1103	A-2B	R1145	B-1C	R1193	A-1C	X1101	A-1C
C1149	B-1A	L1104	B-2B	R1146	B-1C	R1196	A-1C	X1102	A-1B
C1150	B-1C	L1105	A-2B	R1147	B-1C	R1197	A-1C	X1103	B-1A

IDENTIFICATION OF PARTS LOCATION

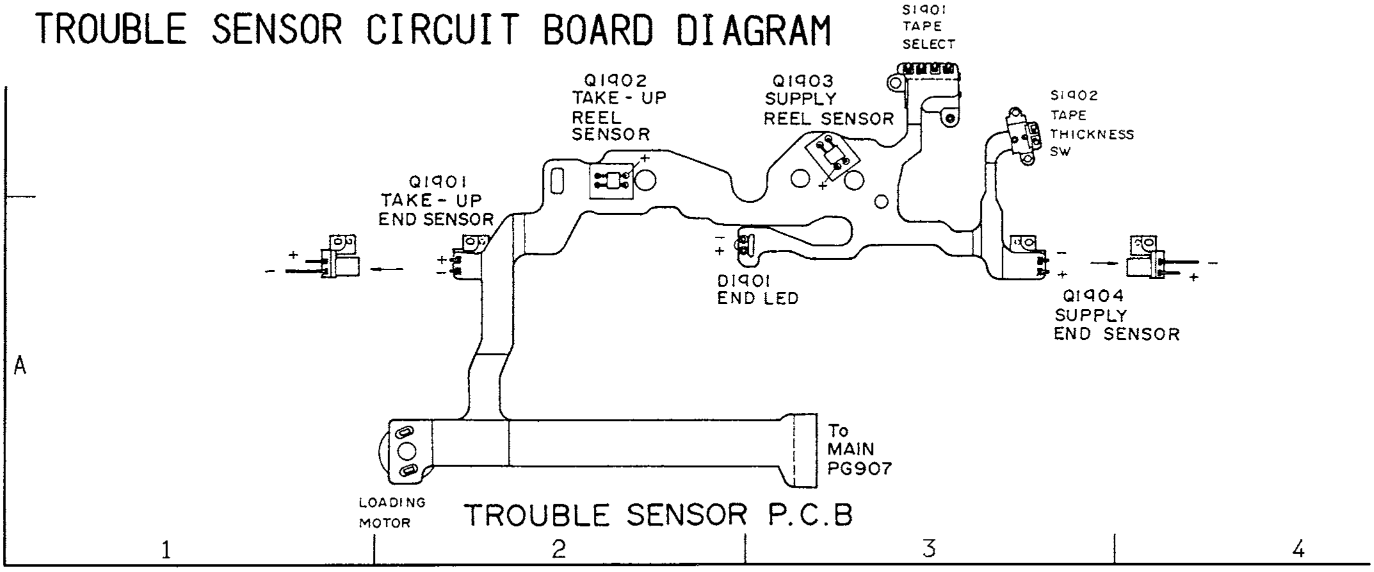
SENSOR P.C.B

Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location
C1001	B-2D	C1093	A-2C	R1030	B-2C
C1002	B-1C	C1098	B-1C	R1031	B-1B
C1004	B-1C	CT1001	B-2B	R1037	B-2C
C1005	B-2D	D1004	A-2D	R1038	B-2C
C1009	B-2C	D1005	B-1D	R1039	B-2C
C1010	B-2C	D1010	B-2C	R1042	B-2C
C1011	B-1C	D1011	B-1B	R1052	B-1C
C1013	B-1C	IC1001	B-2D	R1053	A-2D
C1014	B-1C	IC1002	B-1C	R1057	B-2C
C1015	B-1C	IC1003	B-2D	R1059	A-1C
C1016	B-1C	IC1004	A-2C	R1067	A-1C
C1017	B-1C	L1002	B-1B	R1068	A-1C
C1019	A-2D	L1005	B-1B	R1069	B-1A
C1021	A-2D	L1006	B-2B	R1070	A-1C
C1022	A-2D	PG1001	A-1A	R1071	A-1C
C1023	B-1D	Q1001	B-1D	R1072	B-1C
C1024	B-1D	Q1002	A-1C	R1073	B-1C
C1026	A-2D	Q1007	B-2C	R1074	B-1C
C1027	A-2D	Q1008	A-2D	R1075	B-1C
C1029	B-2D	Q1010	B-1B	R1092	B-2C
C1030	B-2C	R1001	B-2D	R1093	B-2C
C1032	B-2C	R1002	B-2D	R1097	B-1B
C1033	B-2C	R1003	B-2D	R1098	B-1B
C1034	B-2C	R1004	B-1D	R1099	B-1B
C1035	B-2C	R1005	B-1D	R1403	B-1B
C1039	B-2C	R1006	A-1C	TP1001	B-2B
C1040	B-1C	R1007	A-1C	TP1002	B-2B
C1041	B-2C	R1008	B-1D	X1001	A-2C
C1042	B-2B	R1010	B-2C		
C1058	B-1B	R1011	B-1B		
C1081	B-1D	R1012	B-2C		
C1083	A-2B	R1013	B-2C		
C1084	A-2B	R1015	A-2D		
C1085	A-1B	R1017	A-2D		
C1086	A-2B	R1018	B-2C		
C1087	A-1B	R1019	A-2D		
C1088	A-1C	R1022	B-2D		
C1089	B-1C	R1025	A-2D		
C1090	B-1B	R1027	A-2D		
C1091	B-1C	R1028	B-1B		

PROCESS P.C.B

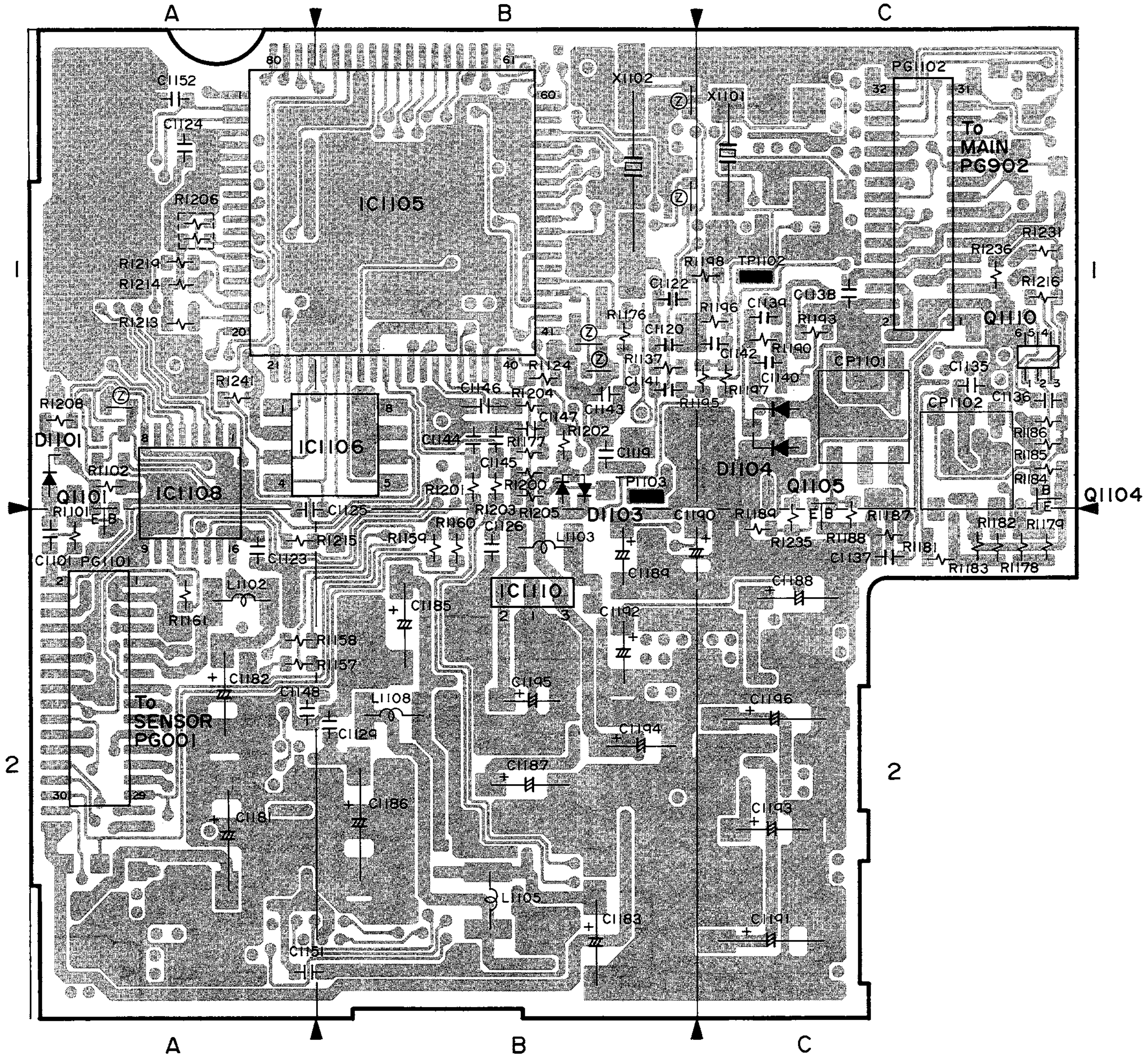
Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location
C1101	A-2A	C1151	A-2A	L1106	B-2C	R1148	B-1C	R1198	A-1C
C1103	B-2A	C1152	A-1A	L1107	B-2C	R1149	B-2C	R1195	A-1C
C1104	B-2A	C1181	A-2A	L1108	A-2B	R1150	B-2C	R1200	A-1B
C1105	B-2A	C1182	A-2A	L1109	B-2C	R1151	B-2C	R1201	A-1B
C1106	B-2A	C1183	A-2B	PG1101	A-2A	R1152	B-2B	R1202	A-1B
C1107	B-2A	C1184	B-1C	PG1102	A-1C	R1153	B-2B	R1203	A-1B
C1109	B-2A	C1185	A-2B	PG1103	B-1C	R1154	B-2B	R1204	A-1B
C1110	B-1A	C1186	A-2B	Q1101	A-2A	R1155	B-2B	R1205	A-1B
C1111	B-2A	C1187	A-2B	Q1102	B-1B	R1156	B-2B	R1206	A-1A
C1117	B-1C	C1188	A-2C	Q1105	A-2C	R1157	A-2A	R1207	B-1A
C1118	B-2C	C1189	A-2B	Q1106	B-1A	R1158	A-2A	R1208	A-1A
C1119	A-1B	C1190	A-2C	Q1107	B-2B	R1159	A-2B	R1209	B-1C
C1120	A-1B	C1191	A-2C	Q1108	B-1A	R1160	A-2B	R1210	B-1C
C1121	B-1C	C1192	A-2B	Q1109	B-1C	R1161	A-2A	R1212	B-1B
C1122	A-1B	C1193	A-2C	Q1110	A-1C	R1162	B-1B	R1213	A-1A
C1123	A-2A	C1194	A-2B	R1101	A-2A	R1163	B-1A	R1214	A-1A
C1124	A-1A	C1195	A-2B	R1102	A-1A	R1164	B-1B	R1215	A-2A
C1125	A-2A	C1196	A-2C	R1104	B-1B	R1166	B-1B	R1216	A-1C
C1126	A-2B	CP1101	A-1C	R1105	B-1A	R1167	B-1A	R1219	A-1A
C1127	B-2B	CP1102	A-1C	R1106	B-1A	R1168	B-1B	R1221	B-1B
C1128	B-2C	D1101	A-1A	R1107	B-2A	R1170	B-2C	R1222	B-1A
C1129	A-2B	D1102	B-1C	R1108	B-2A	R1171	B-2B	R1223	B-1B
C1130	B-2C	D1103	A-1B	R1114	B-1A	R1174	B-1A	R1224	B-1A
C1134	B-2C	D1104	A-1C	R1115	B-1A	R1176	A-1B	R1225	B-1A
C1135	A-1C	D1106	B-2B	R1116	B-2A	R1177	A-1B	R1226	B-1C
C1136	A-1C	D1107	B-2C	R1121	B-2A	R1178	A-2C	R1227	B-1C
C1137	A-2C	IC1101	B-1A	R1123	B-2A	R1179	A-2C	R1228	B-1C
C1138	A-1C	IC1102	B-2B	R1124	A-1B	R1180	A-2C	R1229	B-1C
C1139	A-1C	IC1103	B-1B	R1130	B-2A	R1181	A-2C	R1230	B-1C
C1140	A-1C	IC1104	B-1C	R1132	B-2A	R1182	A-2C	R1231	A-1C
C1141	A-1B	IC1105	A-1B	R1133	B-2B	R1183	A-2C	R1232	B-1C
C1142	A-1C	IC1106	A-1B	R1134	B-2B	R1184	A-1C	R1233	B-1B
C1143	A-1B	IC1107	B-1A	R1135	B-1C	R1185	A-1C	R1235	A-2C
C1144	A-1B	IC1108	A-1A	R1137	A-1B	R1186	A-1C	R1236	A-1C
C1145	A-1B	IC1110	A-2B	R1138	B-1C	R1187	A-2C	R1240	B-1A
C1146	A-1B	L1101	B-2A	R1140	B-1C	R1188	A-2C	TP1102	A-1C
C1147	A-1B	L1102	A-2A	R1144	B-1C	R1190	A-1C	TP1103	A-1B
C1148	A-2A	L1103	A-2B	R1145	B-1C	R1193	A-1C	X1101	A-1C
C1149	B-1A	L1104	B-2B	R1146	B-1C	R1196	A-1C	X1102	A-1B
C1150	B-1C	L1105	A-2B	R1147	B-1C	R1197	A-1C	X1103	B-1A

TROUBLE SENSOR CIRCUIT BOARD DIAGRAM



TROUBLE SENSOR P.C.B

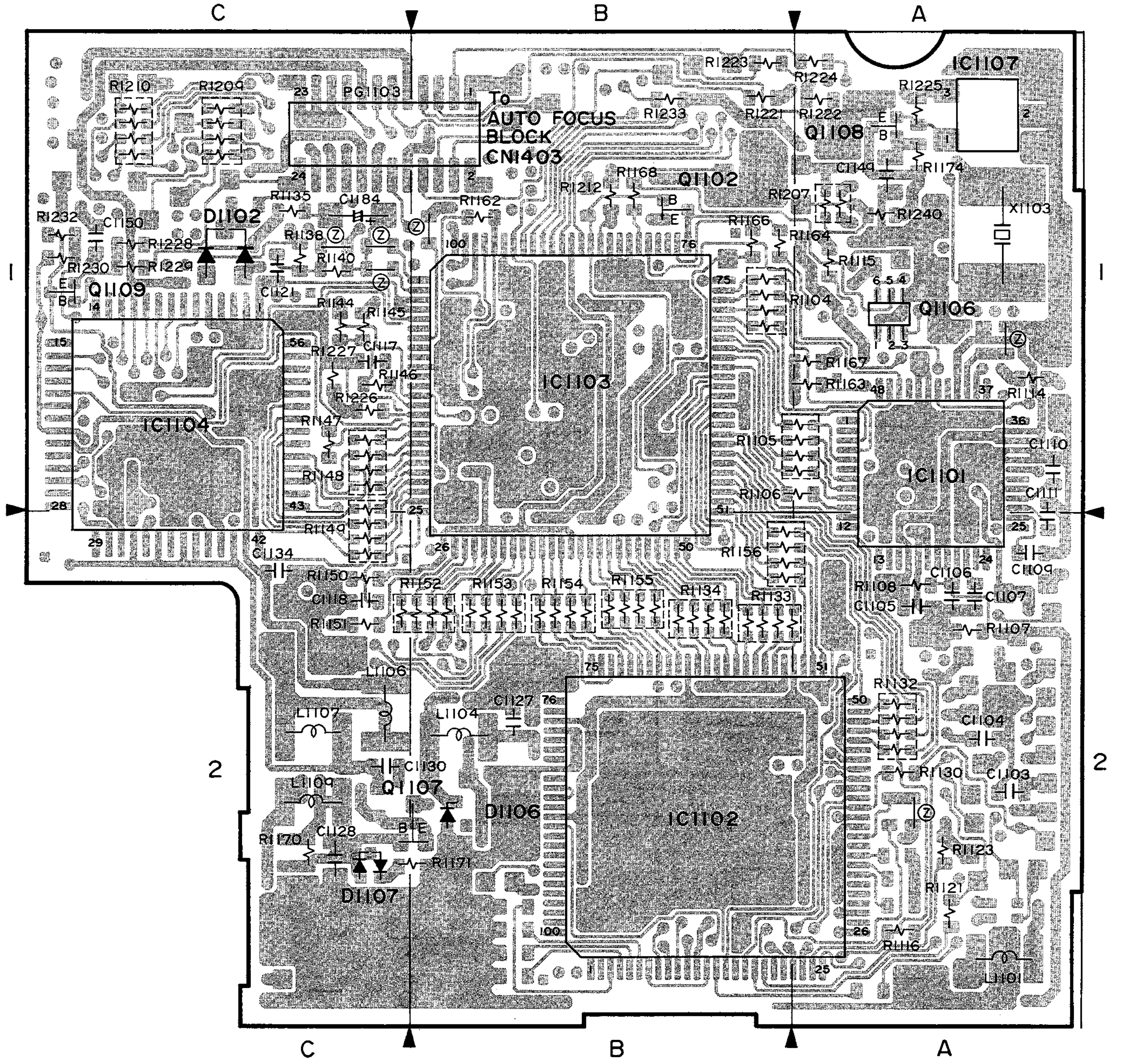
PROCESS CIRCUIT BOARD DIAGRAM


A
B
C
1
2
IC1105
IC1106
IC1108
IC1110
Q1101
Q1104
Q1105
Q1110
D1101
D1103
D1104
X1101
X1102
PG1101
PG1102
CP1101
CP1102
TP1102
P1103
To MAIN PG902
To SENSOR PG001

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

PROCESS P.C.B (SIDE A)

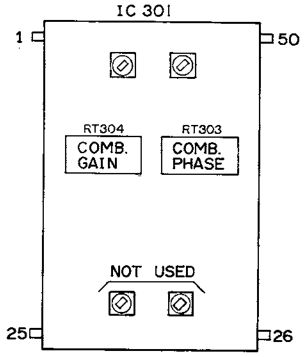
(PATTERN No.155084 – 4)

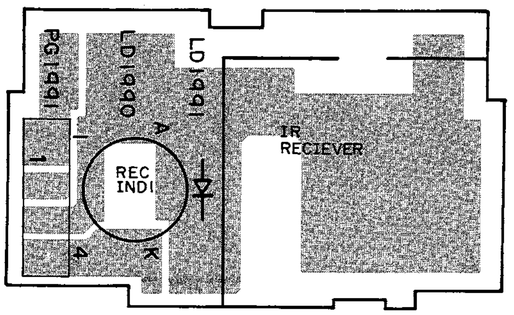

C
B
A
1
2
IC1101
IC1102
IC1103
IC1104
IC1107
Q1102
Q1106
Q1107
Q1108
Q1109
D1102
D1106
D1107
X1103
PG1103
To AUTO FOCUS BLOCK CN1403
L1101
L1104
L1106
L1107
L1109

PROCESS P.C.B (SIDE B)

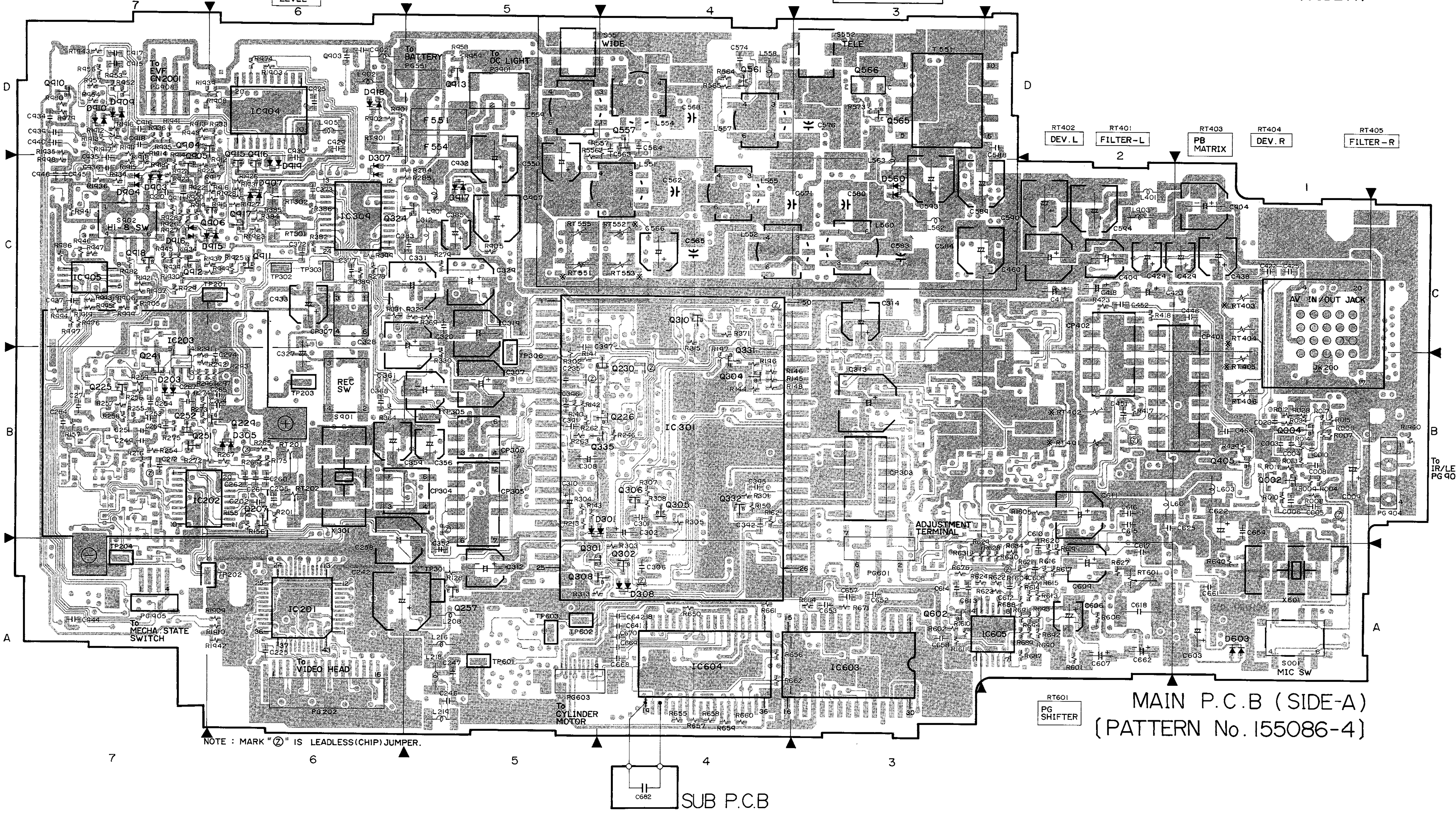
MAIN CIRCUIT BOARD DIAGRAM (SIDE A)

NOTE: SOLDER SEMI-VARIABLE RESISTORS TO THE COMPONENTS MARKED "※" WHEN ADJUSTING THEM.


IC 301
1
50
25
26
RT304
COMB. GAIN
RT303
COMB. PHASE
NOT USED


PG991
LD991
LD990
REC INDI
IR RECIEVER
To MAIN PG904
A
K
1
4

IR/LED P.C.B (SIDE A)


RT201
REC LUMA LEVEL
RT202
REC CHROMA LEVEL
RT901
ODC
RT302
fsc GAIN
RT301
LOCK PHASE
RT551
5V ADJ-1
RT552
5V ADJ-2
RT553
C5V ADJ
RT402
DEV. L
RT401
FILTER-L
RT403
PB MATRIX
RT404
DEV. R
RT405
FILTER-R
RT601
PG SHIFTER
To EVF CN2001
To BATTERY
To DC LIGHT
S551 WIDE
S552 TELE
T551
IC904
IC905
IC304
IC203
IC202
IC201
IC301
IC604
IC603
IC605
HI 8 SW
REC SW
AV IN/OUT JACK
JK200
ADJUSTMENT TERMINAL
To IR/LED PG904
MIC SW
To MECHA STATE SWITCH
To VIDEO HEAD
To CYLINDER MOTOR
PG202
PG603
PG601
X301
X601
SUB P.C.B
C682
1
2
3
4
5
6
7
A
B
C
D

MAIN P.C.B (SIDE-A)
(PATTERN No. 155086-4)

NOTE : MARK "Ⓩ" IS LEADLESS(CHIP) JUMPER.

IDENTIFICATION OF PARTS LOCATION

MAIN P.C.B

Symbol No.	Parts Location
C3	A-1B
C4	A-1B
C5	A-1B
C6	A-1B
C7	B-7B
C8	A-1B
C9	A-1B
C10	A-1B
C11	B-7B
C12	B-7B
C13	B-7B
C14	B-7B
C15	B-7B
C16	B-7B
C17	B-7B
C18	B-7B
C20	A-1B
C21	B-7B
C201	B-1B
C202	A-6B
C203	B-2B
C204	B-1B
C205	A-6B
C206	B-1B
C207	B-1B
C208	B-1B
C209	B-1B
C210	B-1B
C211	B-1B
C212	A-7B
C214	B-1B
C217	B-2B
C218	B-2A
C220	B-2A
C221	B-2A
C222	B-2A
C223	B-2A
C224	B-2A
C225	A-6A
C226	B-2A
C227	B-2A
C228	B-2A
C229	B-2A
C230	B-2A
C231	B-2A
C232	B-2A
C233	B-2A
C234	B-2A
C235	A-5B
C236	B-2A
C237	B-2A
C238	B-2A
C239	B-2A
C241	B-2A
C242	A-5A
C244	B-3A
C245	B-3A
C246	A-5A
C247	A-5A

Symbol No.	Parts Location
C249	A-7B
C251	A-7B
C252	B-1B
C253	A-7B
C254	A-7B
C258	A-5A
C260	A-6B
C261	A-6B
C262	A-6B
C264	A-6B
C265	A-6B
C267	A-7B
C269	A-7B
C271	A-7B
C272	B-1C
C274	A-6B
C273	B-1B
C276	B-1B
C275	B-1B
C277	B-1C
C279	B-3A
C280	B-3A
C282	B-2A
C283	B-3A
C284	A-7B
C290	B-1B
C301	A-4B
C302	A-4B
C304	B-4A
C306	A-4A
C307	A-5B
C308	A-5B
C309	B-3B
C310	A-5B
C312	A-5A
C313	A-3B
C314	A-3C
C315	B-4C
C316	B-3C
C317	B-3C
C318	B-3B
C319	A-5C
C320	A-5C
C322	B-2B
C323	B-2B
C325	B-3B
C326	B-2B
C327	A-6B
C328	A-6C
C329	A-5C
C330	B-2C
C331	A-5C
C332	B-2C
C335	B-2C
C336	B-3C
C337	B-3B
C338	B-3B
C340	B-3B
C342	B-3B

Symbol No.	Parts Location
C343	B-3B
C345	B-3B
C346	B-3B
C347	B-3B
C348	B-3A
C349	B-3A
C350	B-3A
C351	B-2A
C352	A-5A
C353	B-2B
C356	A-5B
C358	B-2B
C359	A-6B
C360	B-3B
C361	A-5B
C362	B-2B
C363	B-2B
C364	B-2B
C365	B-2B
C367	B-2B
C368	A-6B
C369	B-3B
C371	B-4B
C372	A-6C
C373	A-6C
C377	A-6C
C383	A-5C
C385	A-5C
C382	B-2C
C384	B-2C
C374	B-2C
C375	B-2C
C379	B-2C
C380	B-2C
C378	B-2C
C381	B-2C
C376	B-2C
C386	B-3B
C388	B-4B
C389	B-4C
C390	B-4B
C391	A-5B
C392	A-4B
C395	A-4B
C396	A-5B
C397	A-5B
C401	B-6B
C402	B-6B
C403	B-6B
C405	B-6B
C406	B-6B
C407	B-6C
C408	B-6C
C409	A-2C
C410	B-6C
C411	A-2C
C412	B-6C
C413	B-6C
C414	B-6C

Symbol No.	Parts Location
C415	B-6C
C416	B-6C
C417	B-6C
C418	A-2C
C419	B-6C
C420	B-6C
C421	B-6C
C422	A-1C
C423	A-2C
C424	A-2C
C425	A-1C
C426	B-6C
C427	B-6C
C428	B-6C
C429	A-1C
C430	B-7C
C431	B-7C
C432	B-7C
C433	B-7C
C434	B-7C
C435	B-7C
C436	B-7C
C437	B-7C
C438	A-1C
C439	B-7C
C440	B-7B
C441	B-7B
C442	B-7B
C444	B-6B
C445	B-6B
C446	A-1C
C447	B-6B
C448	B-6B
C449	B-6B
C450	B-6B
C451	A-2B
C452	A-2C
C453	B-6B
C455	B-6B
C457	B-7B
C458	B-7B
C459	B-7B
C460	A-2C
C461	B-7B
C462	B-7B
C463	B-6B
C464	A-1B
C465	B-7B
C548	B-4C
C550	A-5C
C551	B-4C
C552	B-4C
C553	B-4C
C554	B-3C
C555	B-3C
C556	B-3C
C557	B-3D
C558	B-4D
C559	B-4D

Symbol No.	Parts Location
C560	B-4D
C561	B-3C
C562	A-4C
C563	A-4D
C564	A-4D
C565	A-4C
C566	A-4C
C567	B-3D
C568	A-4D
C569	B-4D
C571	A-3C
C573	B-5C
C574	A-4D
C576	A-3D
C578	B-5C
C579	B-3D
C580	A-3C
C581	B-5C
C582	B-5C
C583	A-3C
C584	A-3C
C585	B-5D
C586	B-5D
C587	B-5D
C588	A-2D
C589	A-2C
C590	A-2C
C591	B-6C
C592	B-5C
C593	A-3C
C594	A-2C
C595	B-5D
C596	B-5D
C597	B-1D
C598	B-4C
C599	B-4C
C603	A-1A
C604	B-6A
C606	A-2A
C607	A-2A
C608	A-2A
C609	A-2A
C610	A-2A
C611	A-2B
C612	A-2A
C613	A-3A
C614	A-3A
C615	A-2B
C616	A-2B
C617	A-2A
C618	A-2A
C622	A-1B
C625	A-2B
C627	B-6B
C628	B-6B
C629	B-6B
C630	B-6B
C631	B-7B
C636	B-4A

Symbol No.	Parts Location
C639	B-4A
C640	B-4A
C641	A-4A
C642	A-4A
C643	B-4A
C645	B-4A
C646	B-4A
C647	B-4A
C648	B-4A
C649	B-4A
C650	B-4A
C651	B-5A
C652	A-3A
C653	A-3A
C654	B-5A
C655	B-5A
C656	B-5A
C657	A-3A
C658	A-3A
C659	A-1B
C661	A-1A
C662	A-2A
C664	B-6B
C665	B-7A
C666	B-7A
C668	A-4A
C669	A-4A
C670	A-4A
C673	B-4A
C694	B-6A
C695	B-6A
C696	B-6A
C697	B-6A
C902	A-6D
C903	A-6D
C904	A-1C
C905	B-3C
C906	B-2D
C907	A-5C
C908	B-2C
C909	B-2D
C910	A-7C
C911	A-7C
C912	B-2D
C913	B-3C
C914	B-3C
C915	A-7D
C916	A-7D
C917	A-7D
C918	A-7D
C919	B-2D
C921	B-2C
C922	B-1D
C925	A-6D
C929	A-6D
C930	A-6C
C931	B-2D
C932	A-5C
C933	A-6C

Symbol No.	Parts Location
C934	A-7D
C935	A-7C
C936	A-7C
C937	A-7C
C939	A-7D
C940	A-7D
C942	B-2D
C944	A-7A
C945	A-7C
C946	A-7C
CP301	B-4B
CP302	B-4B
CP303	A-3B
CP304	A-6B
CP305	A-5B
CP306	A-5B
CP307	A-6C
CP401	A-1B
CP402	A-2C
D203	A-7B
D204	B-2B
D205	B-1A
D301	A-5B
D302	B-3C
D303	B-2B
D304	B-3A
D305	A-6B
D307	A-6C
D306	B-2C
D308	A-4A
D403	B-7B
D552	B-4C
D553	B-4D
D554	B-4D
D555	B-5C
D556	B-5D
D557	B-5D
D558	B-5D
D559	B-5C
D560	A-3C
D561	B-3D
D562	B-7C
D603	A-1A
D901	B-3D
D902	B-2C
D903	A-7C
D904	A-7C
D907	A-6C
D908	B-3C
D909	A-7D
D910	A-7D
D915	A-7C
D916	A-7C
D917	A-5C
D918	A-6D
D919	A-6C
D920	B-2D
F551	A-5D
F554	A-5D

Symbol No.	Parts Location
IC201	A-6A
IC202	A-7B
IC203	A-7B
IC301	A-4B
IC302	B-4A
IC304	B-3A
IC305	B-3B
IC306	B-2B
IC307	B-3B
IC308	B-2C
IC309	A-6C
IC401	B-6C
IC551	B-3D
IC552	B-4C
IC553	B-5D
IC601	B-6A
IC602	B-7A
IC603	A-3A
IC604	A-4A
IC605	A-2A
IC606	B-6B
IC901	B-1C
IC902	B-2D
IC903	B-3C
IC904	A-6D
IC905	A-7C
JK200	A-1C
L201	B-2B
L202	B-2B
L203	B-2B
L205	B-1B
L208	A-5A
L212	B-2A
L213	B-2A
L214	B-2A
L215	B-2A
L216	A-5A
L218	A-5A
L219	A-5A
L221	B-1B
L222	B-1B
L224	B-1B
L225	B-1B
L230	B-2B
L232	B-1B
L301	B-3B
L302	B-3A
L303	B-3A
L304	B-4C
L305	B-3B
L306	B-3C
L307	B-3B
L310	B-3B
L311	B-2B
L312	A-5C
L401	A-2C
L551	A-4C
L552	A-4C
L553	B-4C

Symbol No.	Parts Location
L554	A-4D
L555	A-4C
L556	B-4C
L557	A-4D
L558	A-4D
L559	A-5D
L560	A-3C
L561	B-5C
L562	A-3C
L563	A-3C
L564	B-4C
L565	B-4C
L566	B-4C
L601	A-2B
L602	B-4A
L603	A-1B
L901	A-5C
L902	A-6D
L903	A-2C
L904	B-3C
L905	A-6D
L906	B-2D
PG1	B-7A
PG202	A-6A
PG551	A-5D
PG601	A-3A
PG602	B-5A
PG603	A-5A
PG901	A-5D
PG902	B-7C
PG903	B-1C
PG904	B-7B
PG905	A-7A
PG906	B-4A
PG907	B-1A
PG908	A-7D
Q2	A-1B
Q4	A-1B
Q5	B-7B
Q6	B-7B
Q200	B-7B
Q201	B-1B
Q202	B-1B
Q207	A-6B
Q209	B-1B
Q214	B-2A
Q216	B-2A
Q218	B-2A
Q219	B-2A
Q220	B-2A
Q221	B-2A
Q222	B-3A
Q223	B-3A
Q224	B-3A
Q225	A-7B
Q226	A-4B
Q227	B-4B
Q228	B-4B
Q229	A-6B

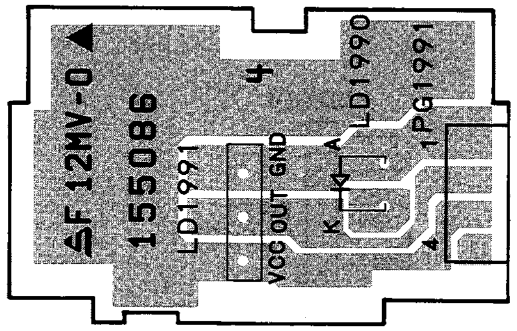
Symbol No.	Parts Location
Q230	A-4B
Q231	B-1B
Q238	B-1B
Q241	A-7B
Q239	B-1B
Q240	B-1B
Q250	B-3A
Q251	A-7B
Q252	A-7B
Q257	A-5A
Q301	A-5A
Q302	A-4A
Q304	A-4B
Q305	A-4B
Q306	A-4B
Q307	B-3A
Q308	A-4A
Q309	B-4C
Q310	A-4C
Q311	B-3C
Q312	B-2B
Q315	B-3A
Q316	B-2A
Q324	A-5C
Q322	B-2C
Q320	B-2C
Q330	B-2C
Q319	B-2C
Q325	B-2C
Q331	A-4B
Q321	B-2C
Q327	B-2C
Q326	B-2C
Q328	B-2C
Q323	B-3C
Q332	A-4B
Q335	A-4B
Q401	B-6C
Q402	B-6C
Q403	B-6C
Q404	B-6C
Q405	A-1B
Q553	B-4C
Q554	B-4C
Q555	B-3C
Q556	B-3C
Q557	A-4D
Q558	B-4C
Q559	B-4D
Q560	B-4D
Q561	A-4D
Q562	B-4D
Q563	B-5C
Q564	B-5C
Q565	A-3D
Q566	A-3D
Q567	B-4C
Q602	A-3A
Q603	B-7A

IDENTIFICATION OF PARTS LOCATION

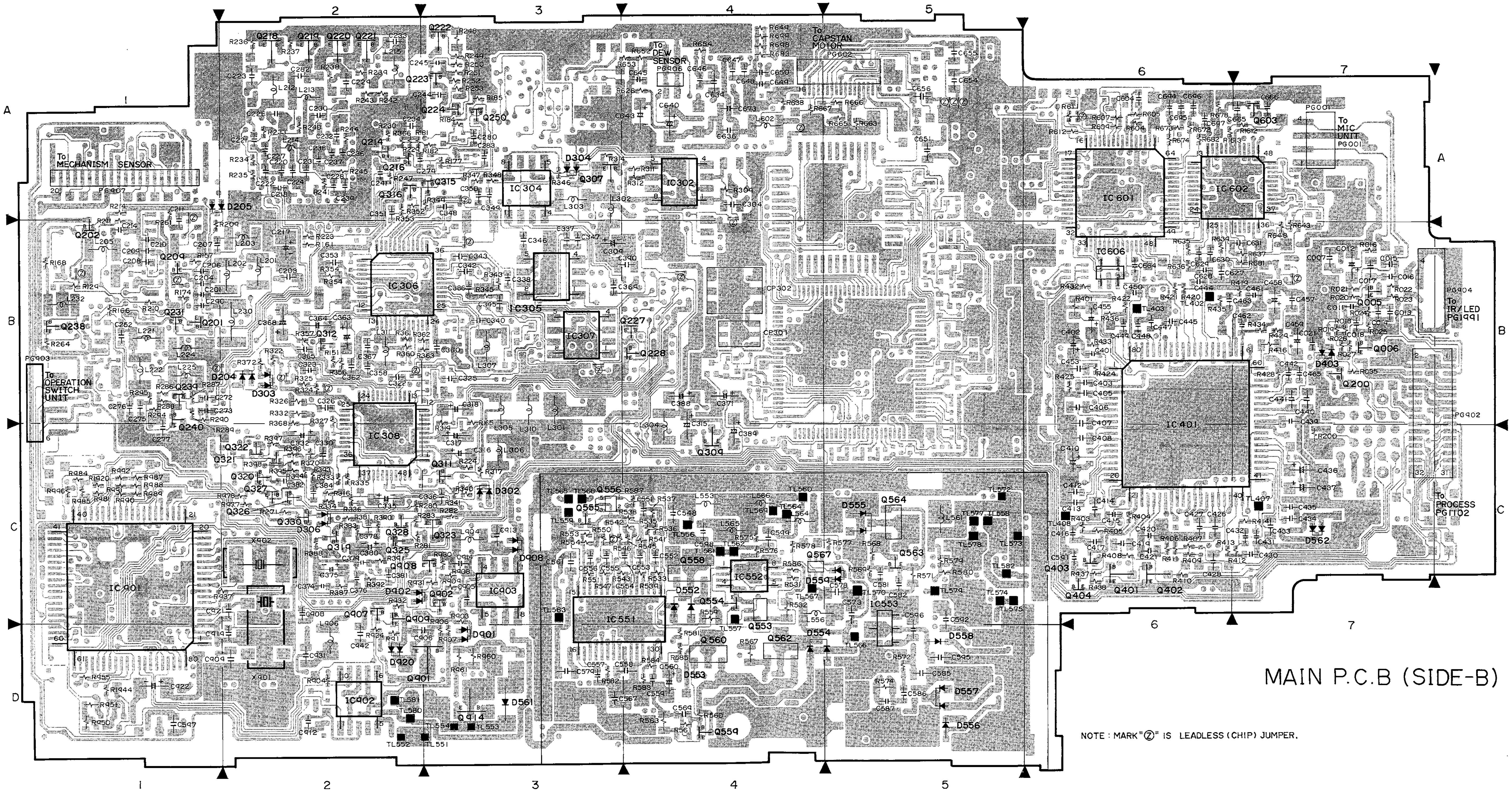
MAIN P.C.B

Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location
Q901	B-3D	R162	A-4B	R271	B-2C	R347	B-3A	R424	B-6B	R604	B-6A	R688	A-2A	R957	A-7D	R1940	A-1B
Q902	B-3C	R165	B-3C	R272	A-7B	R348	B-3A	R425	B-6B	R605	B-6A	R689	A-2A	R958	A-5D	R1941	A-7D
Q904	A-7D	R166	B-1B	R273	A-7B	R349	B-3A	R428	B-7B	R606	A-2A	R690	A-2A	R959	A-5D	R1942	A-6A
Q905	A-7C	R168	B-1B	R274	A-7B	R352	B-2A	R429	B-7B	R607	B-6A	R691	A-2A	R960	B-3D	R1943	A-7D
Q906	A-6C	R174	B-1B	R275	A-7B	R353	B-2A	R432	B-6B	R609	B-6A	R692	A-2A	R961	B-3D	R1944	B-1D
Q907	B-2C	R175	A-6B	R279	A-5C	R354	B-2B	R433	B-6B	R611	B-6A	R693	A-2A	R974	A-6D	R1604	A-2A
Q908	B-3C	R177	B-3A	R284	A-5C	R356	B-2B	R434	B-7B	R612	B-6A	R694	A-2A	R976	A-7C	R1605	A-2B
Q909	B-2C	R181	B-2A	R285	A-5C	R357	B-2B	R435	B-6B	R613	A-2A	R698	B-4A	R977	B-2C	R1610	A-3A
Q910	A-7D	R182	B-3A	R291	A-7B	R360	B-2B	R436	B-6B	R614	A-2A	R699	B-4A	R978	B-2C	R1611	A-3A
Q911	A-6C	R184	B-3A	R292	A-7B	R361	B-2B	R437	B-6C	R615	A-2A	R901	A-6D	R979	A-7D	R1612	B-7A
Q912	A-7C	R185	B-3A	R293	A-6B	R362	B-2B	R438	B-6C	R616	A-2A	R902	A-6D	R980	A-7D	R1613	B-6A
Q913	A-5D	R196	A-4B	R296	A-7B	R363	B-2B	R439	A-1B	R617	A-2A	R903	B-3C	R981	B-1C	RT201	A-6B
Q914	B-3D	R197	A-4B	R297	A-7B	R364	A-6B	R531	B-4C	R619	A-2A	R904	B-2D	R982	A-7C	RT202	A-6B
Q915	A-6C	R200	B-7C	R278	A-6C	R366	B-2A	R532	B-4C	R620	A-2A	R905	A-5C	R984	B-1C	RT301	A-6C
Q916	A-6C	R201	A-6B	R295	B-1B	R368	B-2C	R533	B-4C	R621	A-2A	R906	B-3D	R985	B-1C	RT302	A-6C
Q917	A-6C	R209	B-1B	R294	B-1B	R369	A-5C	R535	B-4C	R622	A-2A	R907	B-3D	R986	A-7C	RT401	A-2B
Q918	A-7C	R210	B-1B	R288	B-1B	R370	B-2C	R536	B-4C	R623	A-2A	R908	B-3C	R987	B-1C	RT402	A-2B
R4	A-1B	R211	B-1B	R286	B-1B	R371	A-4C	R537	B-4C	R624	A-3A	R909	B-3C	R988	B-1C	RT403	A-1C
R6	A-1B	R213	A-5B	R290	B-1B	R372	B-2B	R538	B-4C	R626	B-4A	R911	B-2D	R989	B-1C	RT404	A-1C
R7	A-1B	R214	B-1A	R289	B-1B	R382	A-6C	R539	B-4C	R627	A-2A	R912	A-6C	R990	B-1C	RT405	A-1B
R8	A-1B	R216	A-7B	R287	B-1B	R384	A-6C	R542	B-4C	R628	A-2A	R913	A-7D	R991	B-1C	RT406	A-1B
R9	A-1B	R223	B-2B	R281	B-2C	R385	A-6C	R543	B-3C	R629	A-3A	R914	A-7C	R992	B-1C	RT551	A-5C
R10	A-1B	R224	B-3C	R283	B-2C	R386	A-6C	R545	B-4C	R630	A-2A	R915	A-6C	R993	A-7C	RT552	A-4C
R11	A-1B	R229	B-2A	R280	B-2C	R389	A-6C	R546	B-3C	R631	A-3A	R916	A-6C	R994	A-7C	RT553	A-4C
R12	A-1B	R230	B-2A	R282	B-3C	R399	A-6C	R547	B-3C	R634	A-2A	R917	A-7C	R995	A-7C	RT555	A-5C
R13	A-1B	R233	B-2A	R301	A-4B	R397	B-2C	R550	B-3C	R635	B-6B	R918	A-7C	R996	B-1C	RT601	A-2A
R14	A-1B	R234	B-2A	R302	A-5B	R396	B-2C	R551	B-3C	R636	B-6B	R919	A-7C	R997	A-7C	RT901	A-6D
R15	A-1B	R235	B-2A	R303	A-4A	R398	B-2C	R553	B-3C	R637	B-7B	R920	A-7C	R998	A-7C	S1	A-1A
R16	B-7B	R236	B-2A	R304	A-5B	R395	B-2C	R554	B-3C	R638	B-4A	R921	A-7C	R999	A-7C	S551	A-5D
R17	A-1B	R237	B-2A	R305	A-4B	R394	B-2C	R556	A-5C	R639	B-6B	R922	A-7C	R1903	A-6D	S552	A-3D
R18	B-7B	R238	B-2A	R307	A-4B	R393	B-2C	R557	A-4D	R640	A-1A	R923	A-7C	R1905	A-7C	S901	A-6B
R19	B-7B	R239	B-2A	R308	A-4B	R381	B-2C	R559	B-4C	R643	B-7B	R924	B-2D	R1906	A-7C	S902	A-7C
R20	B-7B	R240	B-2A	R309	B-4A	R390	B-2C	R560	B-4D	R648	B-7B	R925	A-7C	R1907	A-7C	T551	A-3D
R21	B-7B	R241	B-2A	R311	B-4A	R383	B-2C	R561	B-4D	R649	B-4A	R926	A-7C	R1908	A-6D	TP201	A-6C
R22	B-7B	R242	B-2A	R312	B-4A	R388	B-2C	R563	B-4D	R650	A-4A	R927	A-7C	R1909	A-6A	TP202	A-6A
R23	B-7B	R243	B-2A	R313	A-5A	R391	B-2C	R564	A-4D	R652	B-4A	R928	A-7C	R1910	A-6A	TP203	A-6B
R24	B-7B	R244	B-2A	R314	B-3A	R392	B-2C	R565	A-4D	R653	B-4A	R929	A-7C	R1911	A-7D	TP204	A-7A
R25	B-7B	R245	B-2A	R315	A-4C	R387	B-2C	R567	B-4D	R654	B-4A	R930	B-3C	R1912	A-7D	TP301	A-5A
R26	B-7B	R246	A-4B	R316	B-2C	R401	B-6B	R568	B-5C	R655	A-4A	R931	B-3C	R1913	A-7D	TP302	A-6C
R27	B-7B	R247	B-2A	R317	B-3C	R403	B-6C	R569	B-5C	R657	A-4A	R932	B-2C	R1914	A-7C	TP303	A-6C
R28	A-1B	R248	B-3A	R319	B-3C	R404	B-6C	R571	B-5C	R658	A-4A	R933	A-6D	R1915	A-7C	TP305	A-5B
R34	A-1B	R249	B-3A	R322	B-2B	R405	B-6C	R572	B-5D	R659	A-4A	R934	A-7C	R1916	A-7D	TP306	A-5B
R35	B-7B	R250	B-3A	R324	B-2B	R406	B-6C	R573	A-3D	R660	A-4A	R935	A-7D	R1917	A-7D	TP601	A-5A
R128	A-5A	R251	B-3A	R325	B-2B	R407	B-6C	R574	B-5D	R661	A-4A	R936	A-7D	R1918	A-7C	TP602	A-5A
R129	B-1B	R252	B-3A	R326	B-2B	R408	B-6C	R575	B-4C	R663	B-5A	R937	B-1C	R1919	A-7C	TP603	A-5A
R140	A-5B	R253	B-3A	R327	B-2C	R409	B-6C	R576	B-4C	R664	A-3A	R939	A-7C	R1920	B-1C	X301	A-6B
R141	A-5B	R254	A-7B	R329	A-5C	R410	B-6C	R577	B-5C	R665	B-5A	R941	A-7C	R1921	A-7C	X601	A-1A
R142	A-5B	R255	A-7B	R330	A-5B	R411	B-6C	R578	B-4C	R666	B-5A	R943	A-7D	R1923	A-6C	X901	B-2D
R143	A-5B	R256	A-7B	R331	A-6C	R412	B-7C	R579	B-5C	R667	B-4A	R945	A-7C	R1925	A-6C	X902	B-2C
R144	A-4B	R257	A-7B	R332	B-2B	R413	B-6C	R580	B-5C	R671	A-3A	R946	A-7C	R1926	A-6C		
R145	A-4B	R258	A-7B	R333	B-2C	R414	B-7C	R581	B-4D	R672	B-6A	R947	A-7C	R1927	A-6C		
R146	A-4B	R259	A-7B	R334	B-2C	R416	B-7B	R582	B-3D	R673	B-6A	R949	A-6C	R1928	A-6C		
R148	A-4B	R261	B-1A	R335	B-2C	R417	A-2B	R583	B-4D	R674	B-6A	R950	B-1D	R1930	A-7C		
R150	A-4B	R262	A-5B	R336	B-2C	R418	A-2C	R584	B-4D	R676	A-3A	R951	B-1D	R1931	A-6C		
R151	B-2B	R263	A-5B	R340	B-3C	R419	B-7B	R585	B-4D	R678	B-6A	R952	A-7D	R1934	A-7C		
R155	A-6B	R264	B-1B	R341	B-3C	R420	B-6B	R586	B-4C	R681	B-7B	R953	A-7D	R1935	A-7D		
R156	A-6B	R265	A-6B	R343	B-3B	R421	B-6B	R587	B-4C	R682	B-6A	R954	A-7D	R1936	A-7C		
R157	B-1B	R266	A-6B	R345	B-3B	R422	B-6B	R601	A-2A	R683	B-4A	R955	B-1D	R1937	A-6C		
R161	B-2B	R267	A-6B	R346	B-3A	R423	A-2C	R602	A-3A	R687	A-2A	R956	A-7D	R1939	A-7D		

MAIN CIRCUIT BOARD DIAGRAM (SIDE B)


F 12MV-0
155086
LD1991
VCC OUT GND
K
A
LD1990
1PG1991

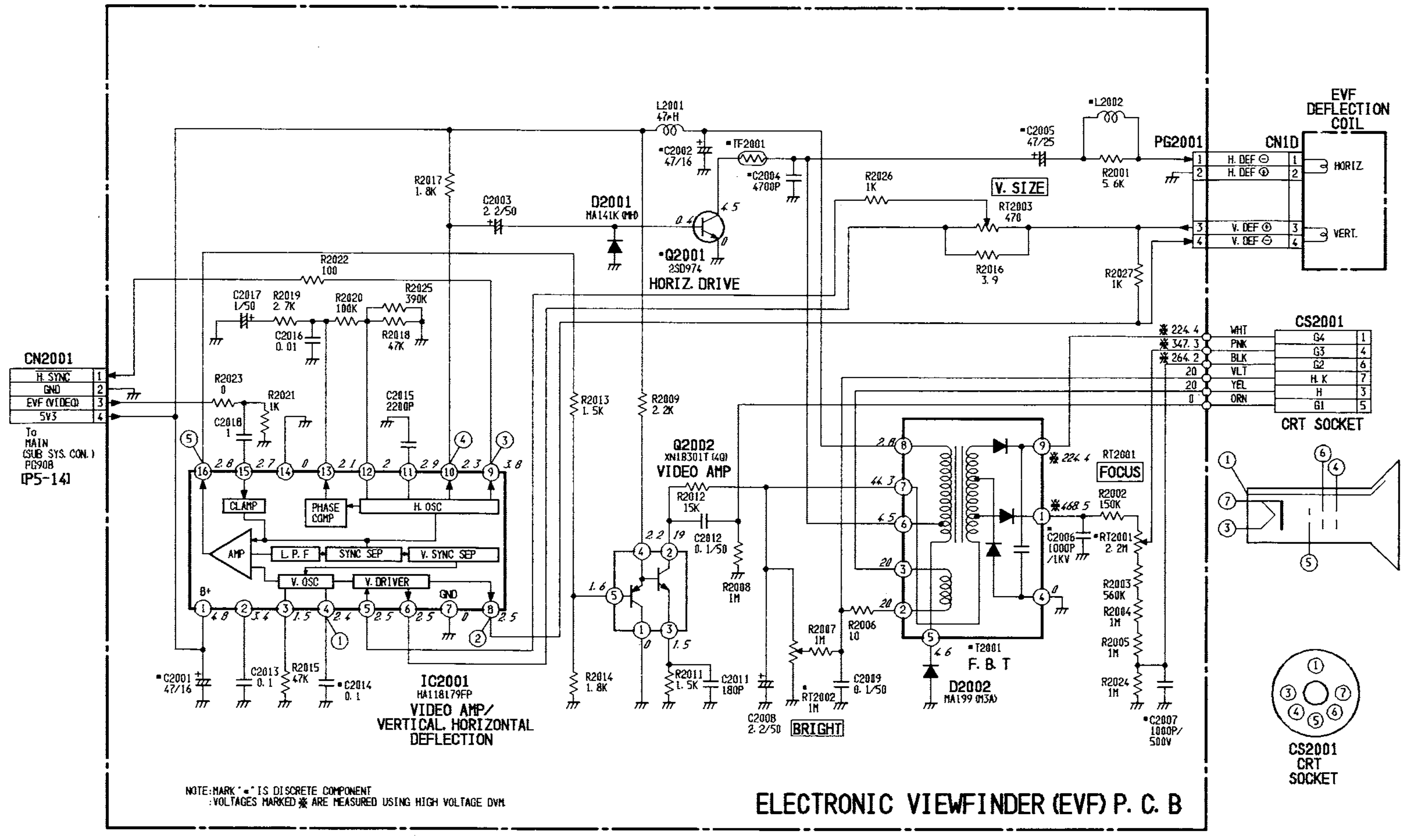
IR/LED P.C.B (SIDE B)


1
2
3
4
5
6
7
A
B
C
D
To MECHANISM SENSOR
PG407
To DEW SENSOR
PG406
To CAPSTAN MOTOR
PG602
To MIC UNIT
PG001
To IR/LED PG1991
PG904
To OPERATION SWITCH UNIT
PG903
To PROCESS PG1102
PG902
IC301
IC302
IC304
IC305
IC306
IC307
IC308
IC401
IC551
IC552
IC553
IC601
IC602
IC606
IC801
IC902
IC903
X401
X402

MAIN P.C.B (SIDE-B)

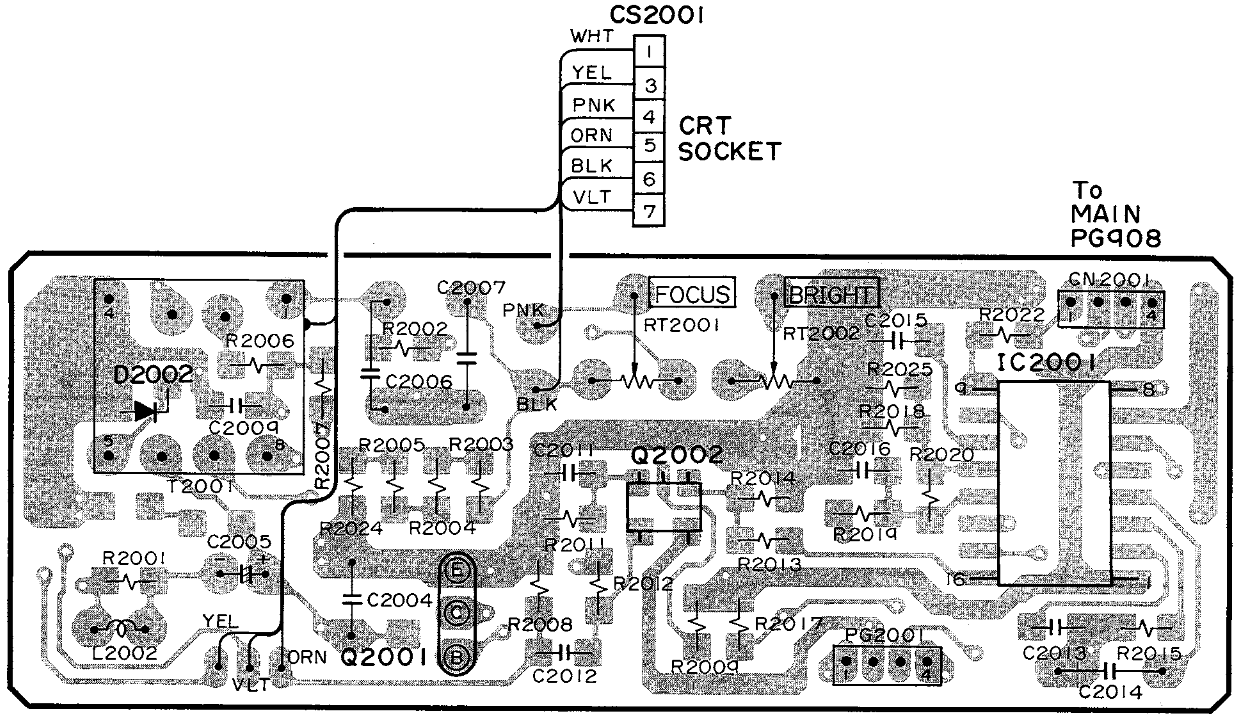
NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

ELECTRONIC VIEWFINDER (EVF) SCHEMATIC DIAGRAM

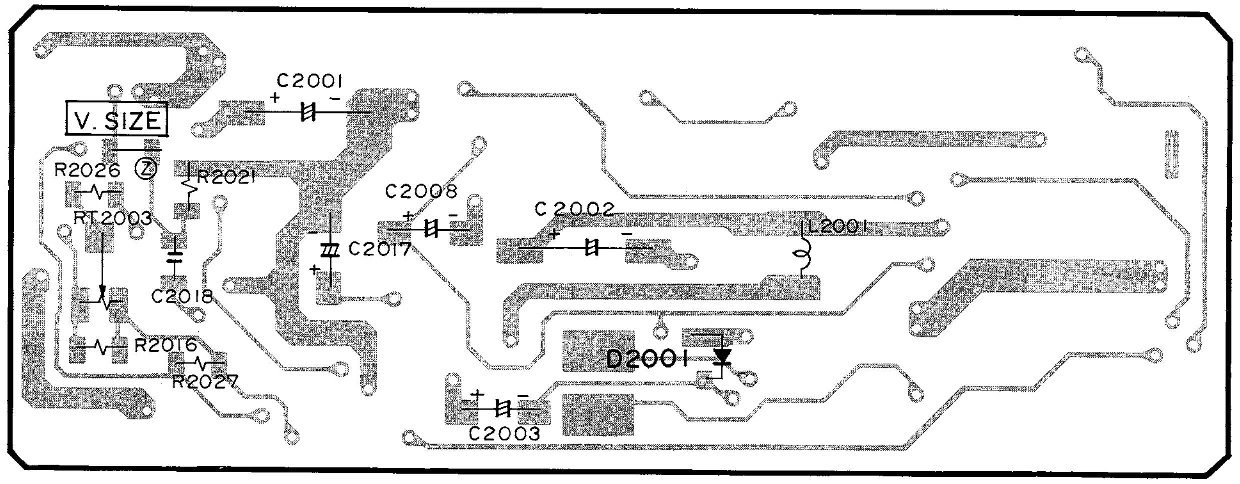

CN2001
H. SYNC 1
GND 2
EVF (VIDEO) 3
5V3 4
To MAIN (SUB SYS. CON.) PG908
[P5-14]
R2022 100
C2017 1/50
R2019 2.7K
R2020 100K
R2025 390K
C2016 0.01
R2018 47K
R2023 0
R2021 1K
C2018 1
C2015 2200P
R2017 1.8K
C2003 2.2/50
D2001 MA141K (MHD)
L2001 47μH
•C2002 47/16
•TF2001
•C2004 4700P
•Q2001 2SD974
HORIZ. DRIVE
R2026 1K
V. SIZE
RT2003 470
R2016 3.9
•C2005 47/25
•L2002
R2001 5.6K
R2027 1K
PG2001
CN1D
H. DEF ⊖
H. DEF ⊕
V. DEF ⊕
V. DEF ⊖
EVF DEFLECTION COIL
HORIZ.
VERT.
CLAMP
PHASE COMP
H. OSC
AMP
L. P. F
SYNC SEP
V. SYNC SEP
V. OSC
V. DRIVER
B+
GND
•C2001 47/16
C2013 0.1
R2015 47K
•C2014 0.1
IC2001
HA118179FP
VIDEO AMP/
VERTICAL, HORIZONTAL
DEFLECTION
R2013 1.5K
R2009 2.2K
R2014 1.8K
Q2002
XN1B301T (4Q)
VIDEO AMP
R2012 15K
C2012 0.1/50
R2008 1M
R2011 1.5K
C2011 180P
C2008 2.2/50
R2007 1M
•RT2002 1M
BRIGHT
R2006 10
C2009 0.1/50
•T2001
F. B. T
D2002 MA199 (M3A)
RT2001
FOCUS
R2002 150K
C2006 1000P /1KV
•RT2001 2.2M
R2003 560K
R2004 1M
R2005 1M
R2024 1M
•C2007 1000P/500V
※224.4
※347.3
※264.2
※468.5
WHT
PNK
BLK
VLT
YEL
ORN
CS2001
G4 1
G3 4
G2 6
H.K 7
H 3
G1 5
CRT SOCKET
CS2001
CRT
SOCKET
ELECTRONIC VIEWFINDER (EVF) P. C. B

NOTE: MARK "•" IS DISCRETE COMPONENT
: VOLTAGES MARKED ※ ARE MEASURED USING HIGH VOLTAGE DVM.

ELECTRONIC VIEWFINDER (EVF) CIRCUIT BOARD DIAGRAM

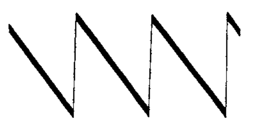
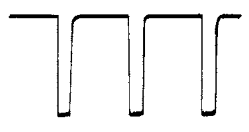
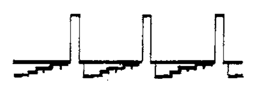
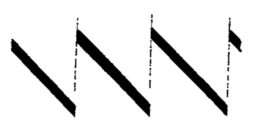
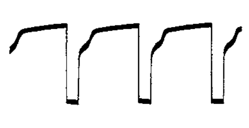

CS2001
WHT 1
YEL 3
PNK 4
ORN 5
BLK 6
VLT 7
CRT SOCKET
To MAIN PG908
CN2001
FOCUS
BRIGHT
RT2001
RT2002
IC2001
Q2002
Q2001
D2002
T2001
L2002
PG2001
E
C
B
R2001
R2002
R2003
R2004
R2005
R2006
R2007
R2008
R2009
R2011
R2012
R2013
R2014
R2015
R2017
R2018
R2019
R2020
R2022
R2024
R2025
C2004
C2005
C2006
C2007
C2009
C2011
C2012
C2013
C2014
C2015
C2016
PNK
BLK
YEL
VLT
ORN
16
9
8

ELECTRONIC VIEWFINDER (EVF) P.C.B
[SIDE-A]

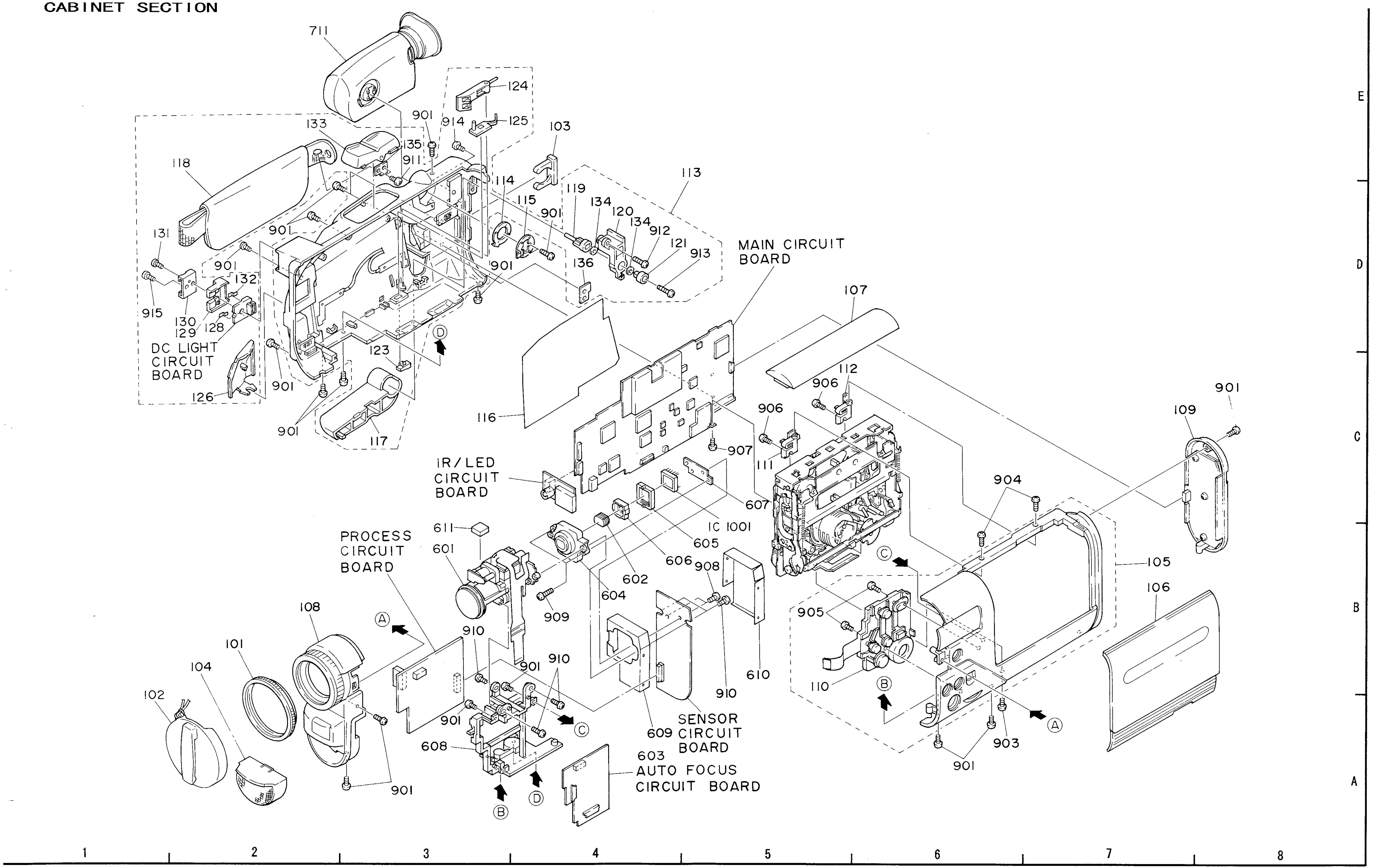

V. SIZE
R2026
Z
R2021
RT2003
C2001
C2008
C2017
C2002
L2001
C2018
R2016
R2027
D2001
C2003

ELECTRONIC VIEWFINDER (EVF) P.C.B
[SIDE-B]

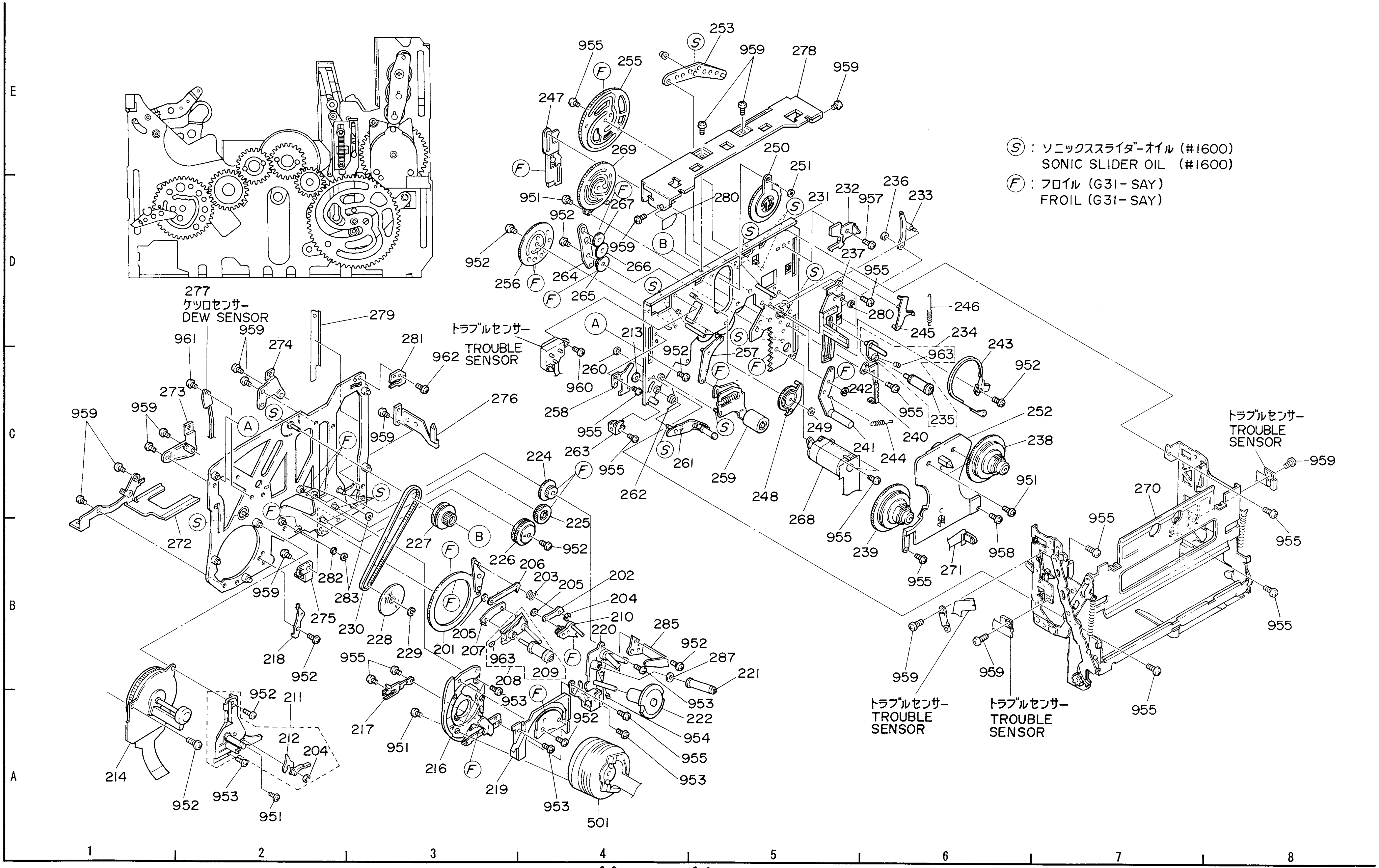
ELECTRONIC VIEWFINDER (EVF) WAVEFORMS

1-A IC2001-4 900mVp-p 0.2V/5.0msec.cm COLOR CHART	3-A IC2001-9 5.0Vp-p 1V/20.0μ sec.cm COLOR CHART	5-A IC2001-16 3.0Vp-p 1V/20.0μ sec.cm COLOR CHART
		
2-A IC2001-8 2.1Vp-p 0.5V/5.0msec.cm COLOR CHART	4-A IC2001-10 1.5Vp-p 0.5V/20.0μ sec.cm COLOR CHART	
		

EXPLODED VIEWS
CABINET SECTION


711
124
125
103
901
914
133
135
911
118
113
114
115
119
134
120
134
912
121
913
901
131
901
132
915
130
129
128
DC LIGHT CIRCUIT BOARD
136
901
MAIN CIRCUIT BOARD
107
D
123
126
901
901
117
116
112
906
906
901
109
907
111
IR/LED CIRCUIT BOARD
607
904
IC 1001
611
605
PROCESS CIRCUIT BOARD
601
606
908
602
604
105
106
C
909
905
108
A
910
101
104
901
910
102
610
110
B
910
901
C
SENSOR CIRCUIT BOARD
609
608
603
AUTO FOCUS CIRCUIT BOARD
903
A
901
B
D
901
E
D
C
B
A
1
2
3
4
5
6
7
8

CHASSIS SECTION


E
D
C
B
A
1
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3
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5
6
7
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253
Ⓢ
955
959
278
959
255
Ⓕ
247
269
Ⓕ
951
267
Ⓕ
280
250
251
Ⓢ
231
232
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Ⓑ
Ⓢ
952
256
Ⓕ
264
266
265
Ⓕ
237
955
Ⓢ
Ⓢ
280
246
245
234
277
ケツロセンサー
DEW SENSOR
279
トラブルセンサー
TROUBLE
SENSOR
Ⓐ
213
952
257
Ⓢ
963
243
952
961
959
274
281
962
960
260
Ⓕ
Ⓕ
242
955
235
273
Ⓐ
Ⓢ
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263
Ⓢ
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244
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959
Ⓕ
959
224
Ⓕ
955
268
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239
951
958
271
955
トラブルセンサー
TROUBLE
SENSOR
959
Ⓢ
Ⓕ
Ⓢ
225
227
Ⓑ
226
952
270
955
955
272
282
283
Ⓕ
206
203
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202
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201
Ⓕ
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218
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211
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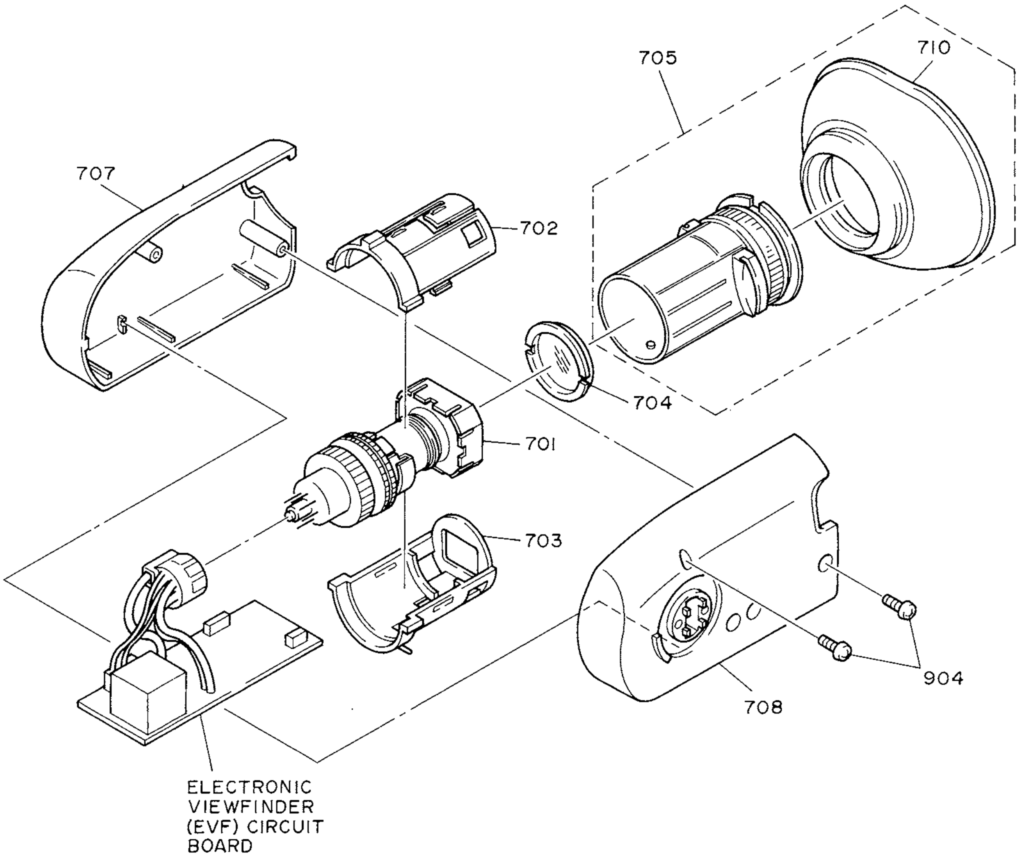
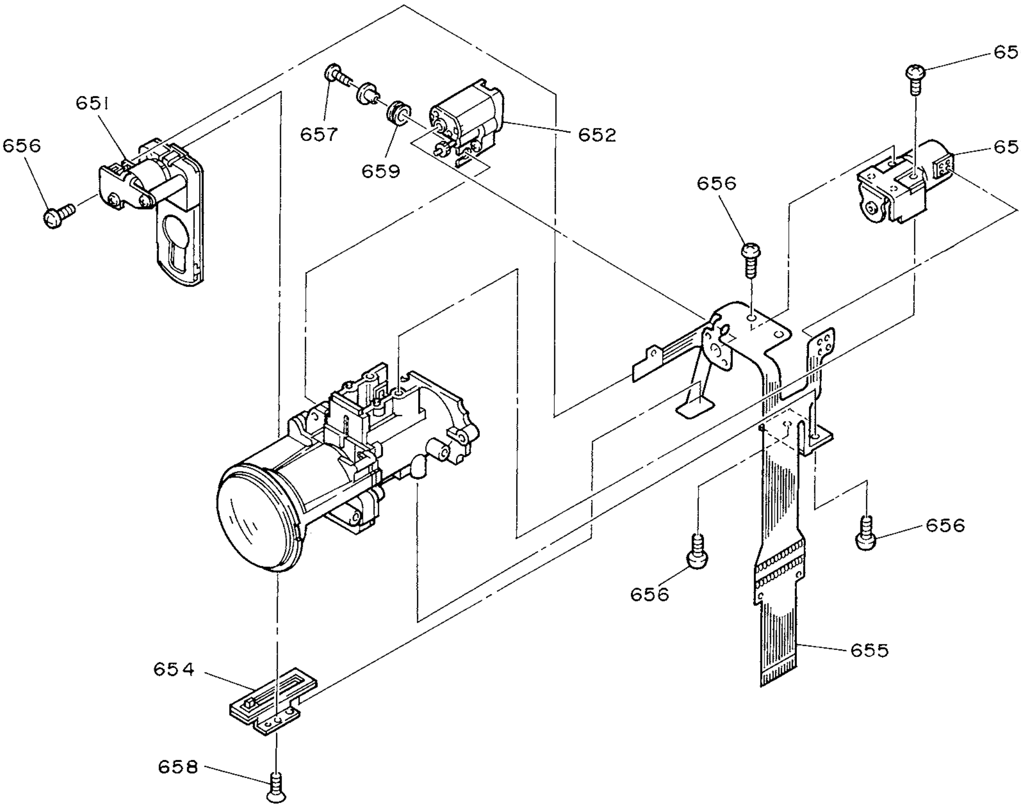
216
Ⓕ
953
Ⓕ
952
953
222
954
955
953
219
953
501
212
204
214
952
953
951
トラブルセンサー
TROUBLE
SENSOR
トラブルセンサー
TROUBLE
SENSOR
955

Ⓢ : ソニックススライダーオイル (#1600)
SONIC SLIDER OIL (#1600)
Ⓕ : フロイル (G31-SAY)
FROIL (G31-SAY)

ELECTRONIC VIEWFINDER (EVF) SECTION


705
710
707
702
704
701
703
904
708
ELECTRONIC VIEWFINDER (EVF) CIRCUIT BOARD

LENS SECTION


656
651
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652
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653
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654
658

E

D

C

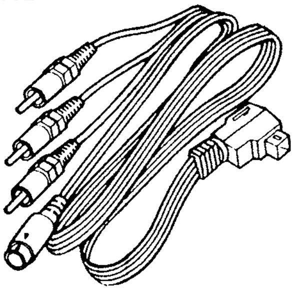
B

A

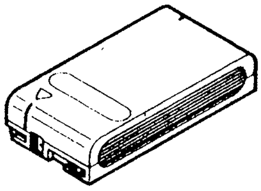
1 2 3 4

ACCESSORIES

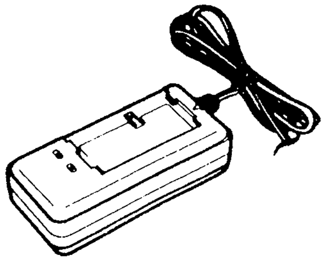
802



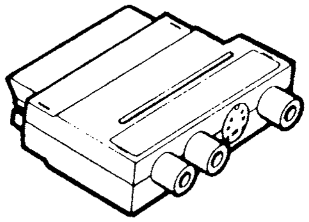
VM-BP82



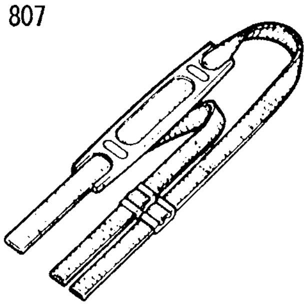
804



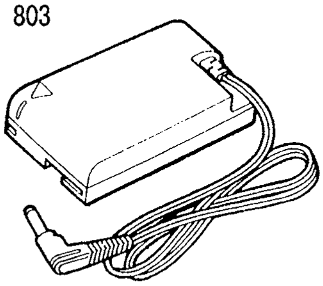
806



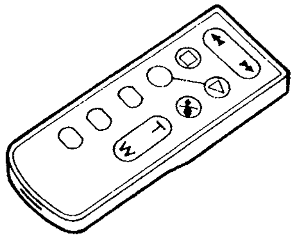
807



803



805



REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANISM SECTION
101	4798911	FOOD, LENS
102	4798761	CAP, FOOD
103	4798442	CASE, BATTERY
104	5422671	MICROPHONE
105	4716611	CASE SIDE(L)
106	4724243	LID, CASSETTE
107	4724233	COVER, TOP
108	4724212	CASE, FRONT
109	5604732	FUNCTION SW
110	5604761	SWITCH
111	6338361	PIECE
112	6338371	PIECE
113	4715303	CASE, SIDE(R)
114	4899872	SPRING
115	4899881	BRACKET
116	7676772	SHEET
117	4715191	COVER
118	6336744	STRAP, HANDLE
119	4590832	PIECE
120	4590821	PIECE
121	4590842	PIECE
122	4899781	BRACKET
123	4751381	KNOB, EJECT
124	4590761	LEVER, LOCK
125	4590771	LEVER
126	4798431	COVER, JACK
128	4590301	TERMINAL R
129	4714821	COVER, TERMINAL
130	7797471	SHOE
131	7784011	SCREW, 2X6
132	4590291	TERMINAL L
133	4751521	BUTTON T/W
134	4343082	WASHER
201	4585293	LING
202	4585401	ARM, GUIDE
203	6553711	SPRING
204	7406661	E RING
205	7787573	WASHER
206	4585391	ARM
207	4585222	BRACKET
208	4585103	GUIDE BASE
209	4585661	GUIDE ROLLER
210	4585612	BASE, GUIDE
211	4585552	PLATE, GUIDE
212	4585121	PLATE, GUIDE
213	4391201	WASHER
214	5579521	MOTOR, CAPSTAN
216	4585263	BASE, CYLINDER
217	4585486	PLATE, GUIDE
218	4585331	PLATE
219	4585282	PLATE, GUIDE
220	4585255	CATCHER
221	6405624	ROLLER
222	6405572	ROLLER
224	4584321	GEAR
225	6405411	GEAR
226	4584351	GEAR
227	6405401	GEAR
228	6405441	GEAR
229	4391203	WASHER
230	6358261	BELT
231	7139443	SUB CHASSIS
232	4584403	PIN
233	4585161	RINK
234	4584382	BASE
235	4585702	GUIDE ROLLER
236	7787573	WASHER
237	4584731	PLATE, GUIDE
238	6416773	REEL, TABLE
239	6416775	REEL, TABLE
240	4585001	FUCK
241	4584602	ARM TENTION
242	4391201	WASHER
243	4584631	BAND TENTION
244	6553742	SPRING
245	4584411	BRAKE
246	6558461	SPRING
247	4585181	SLIDER
248	4584561	GEAR
249	4391201	WASHER
250	6401522	IDLER
251	4391201	WASHER
252	4584691	PLATE
253	4584311	ARM, CAM
254	4510433	ROLLER, CAM
255	4584151	GEAR, CAM
256	4585142	GEAR
257	4584141	ARM
258	4584521	BRACKET
259	4584423	ARM
260	4391201	WASHER
261	4585731	ARM
262	6553731	SPRING
263	4584531	HOLDER
264	4584511	BRACKET
265	4584292	GEAR
266	4584272	GEAR
267	6405372	GEAR
268	5579531	MOTOR, LOADING
269	5613471	SWITCH
270	4584555	STARGE AS
271	4584992	HOLDER LED
272	4586181	BRACKET
273	4586191	BRACKET
274	4586201	BRACKET
275	4586211	BRACKET
276	4585471	BRACKET
277	0116201	DEW SENSOR
278	4585423	BRACKET
279	4350931	SHEET
280	4391291	SHEET
281	4584283	PLATE
282	4510501	ROLLER
283	4391202	WASHER
284	7675902	CUSHION
285	4586581	ARM
286	7406661	RING
287	4510691	SPACER
501	5436812	CYLINDER ASSY
601	6951551	LENS ZOOM ASSY
602	5170151	FILTER
603	1390653	PWB ASSY HTS9548B
604	6338571	LID, SENSOR
605	6338581	HOLDER
606	6338561	RUBBER
607	4899861	PLATE, SENSOR
608	6186412	FRAME, LENS

SYMBOL-NO	P-NO	DESCRIPTION
609	4843011	CASE, SHIELD
610	4843021	LID, SHIELD
611	4391386	CUSHION
651	6951581	IRIS BLOCK
652	6951582	MOTOR, ZOOM
653	6951583	MOTOR, AUTO FOUCUS
654	6951584	SENSOR
655	6951585	CONNECTOR FLEXIBLE
656	6951586	SCREW
657	6951587	SCREW
658	6951588	SCREW
659	6951589	RUBBER
⚠ 701	5319061	CRT
711	7054871	EVF ASSY
702	4715251	CASE, CRT(U)
703	4715241	CASE, CRT(B)
704	4715271	COVER
705	4715331	CASE
707	4715221	CASE, EVF(R)
708	4715231	CASE, EVF(L)
710	4798481	CAP, EYE
901	7775945	SCREW(2X5)
903	7784773	SCREW
904	8619003	SCREW 1.7X5
905	8639106	SCREW
906	8711103	PAN HEAD SCREW 2X3
907	8650103	SCREW (2X3)
908	8650103	SCREW (2X3)
909	7775976	SCREW 2X6
910	7775945	SCREW(2X5)
911	7770761	SCREW 2X8
912	8691106	SCREW (2X6)
913	8691110	SCREW(2X10)
914	7775963	SCREW(2X3)
915	8639114	SCREW 2X14
951	8714026	SCREW (1.4X3.5)
952	7775911	SCREW(1.4X1.6)
953	8712024	PAN HEAD SCREW-1.4MM DX3MM
954	7781174	SCREW
955	7775921	SCREW(1.4X2)
957	7775912	SCREW(1.4X1.8)
958	7773611	SCREW (1.7X3B)
959	7775911	SCREW(1.4X1.6)
960	8712024	PAN HEAD SCREW-1.4MM DX3MM
961	7775921	SCREW(1.4X2)
962	7775911	SCREW(1.4X1.6)
963	7781174	SCREW
		ACCESSARIES
802	5861821	CORD
803	5861811	CABLE
804	4134155	ADAPTOR, AC
805	5616271	REMOTE HAND SET
806	4132852	PLUG
807	4131016	STRAP, SHOULDER
		VTR SECTION
C003	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C004	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C005	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C006	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C007	0893062	CERAMIC CHIP 1UF+80-20% 16V
C008	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C010	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C011	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C013	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C014	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C015	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C016	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C017	0893062	CERAMIC CHIP 1UF+80-20% 16V
C018	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C020	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C021	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C201	0893121	CERAMIC CHIP 39PF+-5% 50V
C202	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C203	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C204	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C205	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C206	0893132	CERAMIC CHIP 270PF+-5% 50V
C207	0202158	CERAMIC CHIP 75PF+-5% 50V
C208	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C209	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C210	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C211	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C212	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C213	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C214	0893114	CERAMIC CHIP 12PF+-5% 50V
C218	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C220	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C221	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C222	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C223	0893062	CERAMIC CHIP 1UF+80-20% 16V
C224	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C225	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C226	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C227	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C228	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C229	0893062	CERAMIC CHIP 1UF+80-20% 16V
C230	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C231	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C232	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C233	0893062	CERAMIC CHIP 1UF+80-20% 16V
C234	0893062	CERAMIC CHIP 1UF+80-20% 16V
C235	0893117	CERAMIC CHIP 22PF+-5% 50V
C236	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C237	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C238	0893062	CERAMIC CHIP 1UF+80-20% 16V
C239	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C241	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C244	0893121	CERAMIC CHIP 39PF+-5% 50V
C245	0893119	CERAMIC CHIP 33PF+-5% 50V
C246	0893122	CERAMIC CHIP 47PF+-5% 50V
C247	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C249	0893124	CHIP CERAMIC 68PF+-5% 50V
C251	0893128	CERAMIC CHIP 150PF+-5% 50V
C252	0893125	CERAMIC CHIP 82PF+-5% 50V
C253	0893131	CERAMIC CHIP 220PF+-5% 50V
C254	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C260	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C261	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C262	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C264	0893122	CERAMIC CHIP 47PF+-5% 50V
C265	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C267	0202158	CERAMIC CHIP 75PF+-5% 50V
C269	0893215	CERAMIC CHIP 3300PF+-10% 50V
C271	0893117	CERAMIC CHIP 22PF+-5% 50V
C272	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C273	0893239	CERAMIC CHIP 0.01UF+80-20% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C274	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C275	0893135	CERAMIC CHIP 470PF+-5% 50V
C276	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C277	0893062	CERAMIC CHIP 1UF+80-20% 16V
C279	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C280	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C282	0893062	CERAMIC CHIP 1UF+80-20% 16V
C283	0893121	CERAMIC CHIP 39PF+-5% 50V
C290	0893214	CERAMIC CHIP 2700PF+-10% 50V
C021	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C201	0893121	CERAMIC CHIP 39PF+-5% 50V
C202	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C203	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C204	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C205	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C206	0893132	CERAMIC CHIP 270PF+-5% 50V
C207	0202158	CERAMIC CHIP 75PF+-5% 50V
C208	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C209	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C210	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C211	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C212	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C213	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C214	0893114	CERAMIC CHIP 12PF+-5% 50V
C218	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C220	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C221	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C222	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C223	0893062	CERAMIC CHIP 1UF+80-20% 16V
C224	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C225	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C226	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C227	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C228	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C229	0893062	CERAMIC CHIP 1UF+80-20% 16V
C230	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C231	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C232	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C233	0893062	CERAMIC CHIP 1UF+80-20% 16V
C234	0893062	CERAMIC CHIP 1UF+80-20% 16V
C235	0893117	CERAMIC CHIP 22PF+-5% 50V
C236	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C237	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C238	0893062	CERAMIC CHIP 1UF+80-20% 16V
C239	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C241	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C244	0893121	CERAMIC CHIP 39PF+-5% 50V
C245	0893119	CERAMIC CHIP 33PF+-5% 50V
C246	0893122	CERAMIC CHIP 47PF+-5% 50V
C247	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C249	0893124	CHIP CERAMIC 68PF+-5% 50V
C251	0893128	CERAMIC CHIP 150PF+-5% 50V
C252	0893125	CERAMIC CHIP 82PF+-5% 50V
C253	0893131	CERAMIC CHIP 220PF+-5% 50V
C254	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C260	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C261	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C262	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C264	0893122	CERAMIC CHIP 47PF+-5% 50V
C265	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C267	0202158	CERAMIC CHIP 75PF+-5% 50V
C269	0893215	CERAMIC CHIP 3300PF+-10% 50V
C271	0893117	CERAMIC CHIP 22PF+-5% 50V
C272	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C273	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C274	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C275	0893135	CERAMIC CHIP 470PF+-5% 50V
C276	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C277	0893062	CERAMIC CHIP 1UF+80-20% 16V
C279	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C280	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C282	0893062	CERAMIC CHIP 1UF+80-20% 16V
C283	0893121	CERAMIC CHIP 39PF+-5% 50V
C290	0893214	CERAMIC CHIP 2700PF+-10% 50V
C301	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C304	0893062	CERAMIC CHIP 1UF+80-20% 16V
C306	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C320	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C322	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C323	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C325	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C326	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C330	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C336	0893208	CERAMIC CHIP 1000PF+-10% 50V
C337	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C338	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C340	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C342	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C343	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C345	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C346	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C347	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C348	0893208	CERAMIC CHIP 1000PF+-10% 50V
C349	0893127	CERAMIC CHIP 120PF+-5% 50V
C350	0893208	CERAMIC CHIP 1000PF+-10% 50V
C351	0893128	CERAMIC CHIP 150PF+-5% 50V
C352	0893131	CERAMIC CHIP 220PF+-5% 50V
C353	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C358	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C360	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C362	0893191	CERAMIC CHIP 6800PF+-10% 25V
C365	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C367	0893117	CERAMIC CHIP 22PF+-5% 50V
C368	0893123	CERAMIC CHIP 56PF+-5% 50V
C369	0893208	CERAMIC CHIP 1000PF+-10% 50V
C372	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C373	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C374	0893208	CERAMIC CHIP 1000PF+-10% 50V
C376	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C377	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C378	0893126	CERAMIC CHIP 100PF+-5% 50V
C379	0893208	CERAMIC CHIP 1000PF+-10% 50V
C381	0893135	CERAMIC CHIP 470PF+-5% 50V
C382	0893134	CERAMIC CHIP 390PF+-5% 50V
C383	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C384	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C386	0893114	CERAMIC CHIP 12PF+-5% 50V
C390	0893062	CERAMIC CHIP 1UF+80-20% 16V
C391	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C392	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C395	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C396	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C397	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C401	0893117	CERAMIC CHIP 22PF+-5% 50V
C403	0893175	CERAMIC CHIP 1000PF+-5% 50V
C405	0893175	CERAMIC CHIP 1000PF+-5% 50V
C406	0893062	CERAMIC CHIP 1UF+80-20% 16V
C407	0202302	CERAMIC CHIP 2200PF+-5% 50V
C408	0202301	CERAMIC CHIP 1500PF+-5% 50V
C412	0893175	CERAMIC CHIP 1000PF+-5% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C413	0893175	CERAMIC CHIP 1000PF+-5% 50V
C414	0893062	CERAMIC CHIP 1UF+80-20% 16V
C415	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C416	0893171	CERAMIC CHIP 470PF+-5% 50V
C417	0893215	CERAMIC CHIP 3300PF+-10% 50V
C419	0893062	CERAMIC CHIP 1UF+80-20% 16V
C420	0893062	CERAMIC CHIP 1UF+80-20% 16V
C421	0893062	CERAMIC CHIP 1UF+80-20% 16V
C422	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C425	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C426	0893062	CERAMIC CHIP 1UF+80-20% 16V
C427	0893062	CERAMIC CHIP 1UF+80-20% 16V
C428	0893062	CERAMIC CHIP 1UF+80-20% 16V
C430	0893215	CERAMIC CHIP 3300PF+-10% 50V
C431	0893171	CERAMIC CHIP 470PF+-5% 50V
C432	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C433	0893062	CERAMIC CHIP 1UF+80-20% 16V
C434	0893175	CERAMIC CHIP 1000PF+-5% 50V
C435	0893175	CERAMIC CHIP 1000PF+-5% 50V
C439	0202301	CERAMIC CHIP 1500PF+-5% 50V
C440	0202302	CERAMIC CHIP 2200PF+-5% 50V
C441	0893062	CERAMIC CHIP 1UF+80-20% 16V
C442	0893175	CERAMIC CHIP 1000PF+-5% 50V
C444	0893173	CERAMIC CHIP 680PF+-5% 50V
C445	0893131	CERAMIC CHIP 220PF+-5% 50V
C446	0893175	CERAMIC CHIP 1000PF+-5% 50V
C447	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C448	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C449	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C450	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C451	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C452	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C453	0893062	CERAMIC CHIP 1UF+80-20% 16V
C457	0893062	CERAMIC CHIP 1UF+80-20% 16V
C461	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C462	0893117	CERAMIC CHIP 22PF+-5% 50V
C463	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C464	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C465	0893175	CERAMIC CHIP 1000PF+-5% 50V
C548	0893062	CERAMIC CHIP 1UF+80-20% 16V
C551	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C552	0893208	CERAMIC CHIP 1000PF+-10% 50V
C553	0893208	CERAMIC CHIP 1000PF+-10% 50V
C554	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C555	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C556	0893208	CERAMIC CHIP 1000PF+-10% 50V
C557	0893129	CERAMIC CHIP 180PF+-5% 50V
C558	0893062	CERAMIC CHIP 1UF+80-20% 16V
C559	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C561	0893062	CERAMIC CHIP 1UF+80-20% 16V
C563	0893117	CERAMIC CHIP 22PF+-5% 50V
C564	0893131	CERAMIC CHIP 220PF+-5% 50V
C567	0893062	CERAMIC CHIP 1UF+80-20% 16V
C569	0893117	CERAMIC CHIP 22PF+-5% 50V
C573	0893062	CERAMIC CHIP 1UF+80-20% 16V
C574	0893117	CERAMIC CHIP 22PF+-5% 50V
C578	0893062	CERAMIC CHIP 1UF+80-20% 16V
C579	0893062	CERAMIC CHIP 1UF+80-20% 16V
C581	0893117	CERAMIC CHIP 22PF+-5% 50V
C582	0893131	CERAMIC CHIP 220PF+-5% 50V
C585	0893062	CERAMIC CHIP 1UF+80-20% 16V
C586	0893127	CERAMIC CHIP 120PF+-5% 50V
C587	0893208	CERAMIC CHIP 1000PF+-10% 50V
C588	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C591	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C592	0893062	CERAMIC CHIP 1UF+80-20% 16V
C595	0893062	CERAMIC CHIP 1UF+80-20% 16V
C596	0893062	CERAMIC CHIP 1UF+80-20% 16V
C597	0893062	CERAMIC CHIP 1UF+80-20% 16V
C598	0893062	CERAMIC CHIP 1UF+80-20% 16V
C599	0893062	CERAMIC CHIP 1UF+80-20% 16V
C604	0893211	CERAMIC CHIP 1500PF+-10% 50V
C608	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C610	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C612	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C613	0893208	CERAMIC CHIP 1000PF+-10% 50V
C614	0893191	CERAMIC CHIP 6800PF+-10% 25V
C615	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C616	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C617	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C618	0883005	MYLAR CHIP 0.015UF+-10% 25V
C625	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C627	0893122	CERAMIC CHIP 47PF+-5% 50V
C628	0893122	CERAMIC CHIP 47PF+-5% 50V
C629	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C630	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C631	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C636	0893062	CERAMIC CHIP 1UF+80-20% 16V
C639	0893062	CERAMIC CHIP 1UF+80-20% 16V
C641	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C642	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C645	0893226	CERAMIC CHIP 0.15UF+80-20% 16V
C646	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C647	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C648	0893191	CERAMIC CHIP 6800PF+-10% 25V
C649	0893191	CERAMIC CHIP 6800PF+-10% 25V
C650	0893191	CERAMIC CHIP 6800PF+-10% 25V
C651	0893062	CERAMIC CHIP 1UF+80-20% 16V
C652	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C653	0893119	CERAMIC CHIP 33PF+-5% 50V
C654	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C655	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C656	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C657	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C658	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C659	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C661	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C664	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C665	0893126	CERAMIC CHIP 100PF+-5% 50V
C666	0893121	CERAMIC CHIP 39PF+-5% 50V
C668	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C669	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C670	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C671	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C673	0893062	CERAMIC CHIP 1UF+80-20% 16V
C694	0893191	CERAMIC CHIP 6800PF+-10% 25V
C695	0893191	CERAMIC CHIP 6800PF+-10% 25V
C696	0893191	CERAMIC CHIP 6800PF+-10% 25V
C697	0893191	CERAMIC CHIP 6800PF+-10% 25V
C902	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C903	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C905	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C906	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C908	0893208	CERAMIC CHIP 1000PF+-10% 50V
C909	0893062	CERAMIC CHIP 1UF+80-20% 16V
C910	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C911	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C912	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C913	0893062	CERAMIC CHIP 1UF+80-20% 16V
C914	0893062	CERAMIC CHIP 1UF+80-20% 16V

SYMBOL-NO	P-NO	DESCRIPTION
C915	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C916	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C917	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C918	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C919	0893116	CERAMIC CHIP 18PF+-5% 50V
C921	0893116	CERAMIC CHIP 18PF+-5% 50V
C925	0893131	CERAMIC CHIP 220PF+-5% 50V
C929	0893119	CERAMIC CHIP 33PF+-5% 50V
C930	0893126	CERAMIC CHIP 100PF+-5% 50V
C931	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C934	0893217	CERAMIC CHIP 4700PF+-10% 50V
C935	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C936	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C937	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C939	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C940	0893242	CERAMIC CHIP 0.022UF+80-20% 50
C942	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C944	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C945	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C946	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
RT201	5040163	TRIMMER
RT202	5040161	TRIMMER
RT301	5040161	TRIMMER
RT302	5040165	TRIMMER
RT401	5040108	SEMI VARIABLE
RT402	5040109	SEMI VARIABLE 47KOHM
RT403	5040109	SEMI VARIABLE 47KOHM
RT404	5040109	SEMI VARIABLE 47KOHM
RT405	5040108	SEMI VARIABLE
RT406	0104176	CHIP RESISTOR 27KOHM+-10% 1/8W
RT551	5040108	SEMI VARIABLE
RT552	5040108	SEMI VARIABLE
RT553	5040109	SEMI VARIABLE 47KOHM
RT555	0104165	CHIP RESISTOR 3.9KOHM+-10% 1/8
RT601	5040162	TRIMMER
RT901	5040164	TRIMMER
R004	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R006	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R007	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R008	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R009	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R010	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R011	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R012	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R013	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R014	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R015	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R016	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R017	0790196	CHIP RESISTOR 150 OHM+-5% 1/16
R018	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R019	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R020	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R021	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R022	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R023	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R024	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R025	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R026	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R027	0790196	CHIP RESISTOR 150 OHM+-5% 1/16
R034	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R035	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R128	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R129	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R140	0790203	CHIP RESISTOR 470 OHM+-5% 1/16
R141	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R142	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R143	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R144	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16
R145	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R146	0790197	CHIP RESISTOR 180 OHM+-5% 1/16
R148	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R150	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R154	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R155	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R156	0790204	CHIP RESISTOR 560 OHM+-5% 1/16
R157	0790204	CHIP RESISTOR 560 OHM+-5% 1/16
R161	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R162	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R165	0790246	CHIP RESISTOR 820KOHM+-5% 1/16
R166	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R167	0790205	CHIP RESISTOR 680 OHM+-5% 1/16
R168	0790203	CHIP RESISTOR 470 OHM+-5% 1/16
R174	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R175	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R177	0790187	CHIP RESISTOR 33 OHM+-5% 1/16W
R181	0790203	CHIP RESISTOR 470 OHM+-5% 1/16
R182	0790204	CHIP RESISTOR 560 OHM+-5% 1/16
R184	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R185	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R196	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R197	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R200	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16
R201	0790203	CHIP RESISTOR 470 OHM+-5% 1/16
R209	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R210	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R211	0790199	CHIP RESISTOR 270 OHM+-5% 1/16
R212	0790199	CHIP RESISTOR 270 OHM+-5% 1/16
R213	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R214	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16
R216	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16
R223	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R224	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R229	0790201	CHIP RESISTOR 330 OHM+-5% 1/16
R230	0790204	CHIP RESISTOR 560 OHM+-5% 1/16
R233	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R234	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R235	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R236	0790201	CHIP RESISTOR 330 OHM+-5% 1/16
R237	0790201	CHIP RESISTOR 330 OHM+-5% 1/16
R238	0790201	CHIP RESISTOR 330 OHM+-5% 1/16
R239	0790201	CHIP RESISTOR 330 OHM+-5% 1/16
R240	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R241	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R242	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R243	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R244	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R245	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R246	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R247	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R248	0103817	CHIP RESISTOR 6.8 OHM+-10% 0.1
R249	0790205	CHIP RESISTOR 680 OHM+-5% 1/16
R250	0790204	CHIP RESISTOR 560 OHM+-5% 1/16
R251	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R252	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R253	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R254	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R255	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R256	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R257	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R258	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16

SYMBOL-NO	P-NO	DESCRIPTION
R259	0790205	CHIP RESISTOR 680 OHM+-5% 1/16
R261	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R262	0790194	CHIP RESISTOR 100 OHM+-5% 1/16
R263	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R264	0790206	CHIP RESISTOR 820 OHM+-5% 1/16
R265	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R266	0790236	CHIP RESISTOR 150KOHM+-5% 1/16
R267	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R271	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W
R272	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R273	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R274	0790203	CHIP RESISTOR 470 OHM+-5% 1/16
R275	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R278	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R279	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R280	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R281	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R282	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R283	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R284	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R285	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R286	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R287	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R288	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R289	0790195	CHIP RESISTOR 120 OHM+-5% 1/16
R290	0790199	CHIP RESISTOR 270 OHM+-5% 1/16
R291	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R292	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W
R293	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R294	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R295	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R296	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R297	0790241	CHIP RESISTOR 330KOHM+-5% 1/16
R301	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R302	0790235	CHIP RESISTOR 120KOHM+-5% 1/16
R303	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R304	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R305	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R307	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R308	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R309	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R311	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R312	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W
R313	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16
R314	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R315	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R316	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R317	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R322	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R324	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R325	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R326	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16
R327	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R329	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R330	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R331	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16
R332	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R333	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16
R334	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R335	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R336	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R340	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R341	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R343	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R345	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16
R346	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R347	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16
R348	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R349	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R352	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R353	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R354	0104298	CHIP RESISTOR 100KOHM+-0.5% 1/
R356	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R357	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R360	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16
R361	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R362	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R363	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R364	0790203	CHIP RESISTOR 470 OHM+-5% 1/16
R366	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R368	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R369	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R371	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R372	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R381	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R382	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R383	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R384	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R385	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R386	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R387	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R388	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R389	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R390	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R391	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R392	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R393	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R394	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R395	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R396	0790206	CHIP RESISTOR 820 OHM+-5% 1/16
R397	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R398	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R399	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R401	0104297	CHIP RESISTOR 10KOHM+-0.5% 16V
R403	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16
R404	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R405	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R406	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R407	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R408	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R409	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R410	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R411	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R412	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R413	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R414	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16
R416	0104297	CHIP RESISTOR 10KOHM+-0.5% 16V
R417	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R418	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R419	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R420	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R421	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R422	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R423	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R424	0790236	CHIP RESISTOR 150KOHM+-5% 1/16
R425	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R428	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R429	0790236	CHIP RESISTOR 150KOHM+-5% 1/16
R432	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R433	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
R434	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W	R617	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R435	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W	R619	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R436	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W	R620	0790239	CHIP RESISTOR 270KOHM+-5% 1/16
R437	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16	R621	0790239	CHIP RESISTOR 270KOHM+-5% 1/16
R438	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16	R622	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R439	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16	R623	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R531	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R624	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R532	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W	R626	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R533	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W	R627	0790237	CHIP RESISTOR 180KOHM+-5% 1/16
R535	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R628	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R536	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W	R629	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R537	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W	R630	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16
R538	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16	R631	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16
R539	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W	R634	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R541	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R635	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R542	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16	R636	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R543	0790244	CHIP RESISTOR 560KOHM+-5% 1/16	R637	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R545	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16	R638	0790206	CHIP RESISTOR 820 OHM+-5% 1/16
R546	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W	R639	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R547	0790244	CHIP RESISTOR 560KOHM+-5% 1/16	R640	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R550	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16	R643	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R551	0790244	CHIP RESISTOR 560KOHM+-5% 1/16	R648	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R553	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W	R649	0790172	CHIP RESISTER 2.2OHM+-5% 1/16W
R554	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W	R650	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R556	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16	R652	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R557	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R653	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R559	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W	R654	0790241	CHIP RESISTOR 330KOHM+-5% 1/16
R560	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16	R655	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R561	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R656	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R563	0103839	CHIP RESISTOR 470OHM+-5% 0.1W	R657	0790205	CHIP RESISTOR 680 OHM+-5% 1/16
R564	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16	R658	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R565	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R659	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R567	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W	R660	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R568	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16	R661	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R569	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R662	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R571	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W	R663	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R572	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16	R664	0790237	CHIP RESISTOR 180KOHM+-5% 1/16
R573	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16	R665	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R574	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W	R666	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16
R575	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R667	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16
R576	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R671	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16
R577	0790234	CHIP RESISTOR 100KOHM+-5% 1/16	R672	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R578	0790234	CHIP RESISTOR 100KOHM+-5% 1/16	R673	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R579	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R674	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R580	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R676	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R581	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R678	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R582	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16	R681	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R583	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W	R682	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R584	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W	R683	0790172	CHIP RESISTER 2.2OHM+-5% 1/16W
R585	0790198	CHIP RESISTOR 220 OHM+-5% 1/16	R687	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W
R586	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W	R688	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R587	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W	R689	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R601	0790243	CHIP RESISTOR 470KOHM+-5% 1/16	R690	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R602	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W	R691	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R604	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W	R692	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R605	0105172	CHIP RESISTOR 1.5MOHM+-5% 1/16	R693	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R606	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W	R694	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R607	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W	R698	0790172	CHIP RESISTER 2.2OHM+-5% 1/16W
R609	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W	R699	0790172	CHIP RESISTER 2.2OHM+-5% 1/16W
R611	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W	R901	0790243	CHIP RESISTOR 470KOHM+-5% 1/16
R612	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W	R902	0790238	CHIP RESISTOR 220KOHM+-5% 1/16
R613	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W	R903	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R614	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W	R904	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R615	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16	R905	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R616	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W	R906	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R907	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R908	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R909	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R911	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R912	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R913	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R914	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R915	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R916	0790238	CHIP RESISTOR 220KOHM+-5% 1/16
R917	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R918	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R919	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R920	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R921	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R922	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R923	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R924	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R925	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R926	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R927	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R928	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R929	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R930	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R931	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R932	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R933	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R934	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R935	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R936	0790236	CHIP RESISTOR 150KOHM+-5% 1/16
R937	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R939	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R941	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R943	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R945	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R946	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R947	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R949	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R950	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R951	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R952	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R953	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R954	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R955	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R956	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16
R957	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R958	0790242	CHIP RESISTOR 390KOHM+-5% 1/16
R959	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R960	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R961	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R974	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R976	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R977	0790194	CHIP RESISTOR 100 OHM+-5% 1/16
R978	0790187	CHIP RESISTOR 33 OHM+-5% 1/16W
R979	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R980	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R981	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R982	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R984	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R985	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R986	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R987	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R988	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R989	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R990	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R991	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R992	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R993	0790243	CHIP RESISTOR 470KOHM+-5% 1/16
R994	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R995	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R996	0790243	CHIP RESISTOR 470KOHM+-5% 1/16
R997	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R998	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R999	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16
R1604	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R1606	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1610	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R1611	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R1612	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16
R1613	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R1905	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R1906	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1907	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1908	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1909	0790205	CHIP RESISTOR 680 OHM+-5% 1/16
R1910	0790205	CHIP RESISTOR 680 OHM+-5% 1/16
R1911	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16
R1912	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R1913	0790235	CHIP RESISTOR 120KOHM+-5% 1/16
R1914	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1915	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16
R1916	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R1917	0790235	CHIP RESISTOR 120KOHM+-5% 1/16
R1918	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1919	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W
R1920	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1921	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1925	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R1926	0790206	CHIP RESISTOR 820 OHM+-5% 1/16
R1927	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R1928	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16
R1930	0790202	CHIP RESISTOR 390 OHM+-5% 1/16
R1931	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16
R1934	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1935	0790243	CHIP RESISTOR 470KOHM+-5% 1/16
R1936	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16
R1937	0790234	CHIP RESISTOR 100KOHM+-5% 1/16
R1939	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16
R1940	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1941	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R1943	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R1944	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
D203	5337351	DIODE MA132WK
D204	5337351	DIODE MA132WK
D205	5337351	DIODE MA132WK
D301	5337351	DIODE MA132WK
D302	5337351	DIODE MA132WK
D303	5337351	DIODE MA132WK
D304	5337351	DIODE MA132WK
D305	5337351	DIODE MA132WK
D306	5337351	DIODE MA132WK
D307	5337351	DIODE MA132WK
D308	5337351	DIODE MA132WK
D403	5337354	DIODE MA133
D552	5337371	DIODE SB07-03C
D553	5337371	DIODE SB07-03C
D554	5337371	DIODE SB07-03C
D555	5337371	DIODE SB07-03C
D556	5337101	DIODE MA110
D557	5337361	DIODE SB0505CP
D558	5337101	DIODE MA110

SYMBOL-NO	P-NO	DESCRIPTION
D559	5337352	DIODE MA132WA
D560	5337352	DIODE MA132WA
D561	5337391	DIODE D1FS4
D562	5337351	DIODE MA132WK
D603	5337351	DIODE MA132WK
D604	5337351	DIODE MA132WK
D901	5337351	DIODE MA132WK
D902	5337351	DIODE MA132WK
D903	5337352	DIODE MA132WA
D904	5337352	DIODE MA132WA
D907	5337351	DIODE MA132WK
D908	5337351	DIODE MA132WK
D909	5337354	DIODE MA133
D910	5337354	DIODE MA133
D915	5337354	DIODE MA133
D916	5337354	DIODE MA133
D917	5337354	DIODE MA133
D918	5337354	DIODE MA133
D919	5337351	DIODE MA132WK
D920	5337351	DIODE MA132WK
D1901	5382221	LED PLT-462T3
IC201	1365291	IC HA118167F
IC202	1365081	IC M52357VP
IC203	1351051	IC NJM2107F
IC301	1373902	IC HT7418A
IC302	1365151	IC MM1117XF
IC304	1365141	IC MM1113XF
IC305	1365141	IC MM1113XF
IC306	1352001	IC CXA1208R
IC307	1365131	IC MM1111XF
IC308	1359971	IC HA118141F
IC309	1351991	IC CXL1203N
IC401	1365261	IC HA118176F
IC551	1352352	IC TL1455CDB
IC552	1352384	IC NJM2903V
IC553	1365011	IC NJM79L09UA
IC601	1365221	IC HD49782A
IC602	1359861	IC XR-1080CV
IC603	1359902	IC LB1881M
IC604	1359963	IC LB1880M B
IC605	5300194	IC NJM2902V
IC606	1350792	IC TC4S66F
IC901	1365742	IC HD6433724A27H
IC902	1352771	IC TA8409F
IC903	1352581	IC S8420FF
IC904	1359911	IC XRU5947AFS
IC905	1352384	IC NJM2903V
Q002	1323321	TRANSISTOR 2SD2216
Q003	1323321	TRANSISTOR 2SD2216
Q004	1323231	TRANSISTOR 2SB1462
Q005	1323321	TRANSISTOR 2SD2216
Q006	1323231	TRANSISTOR 2SB1462
Q201	1323171	TRANSISTOR UN9213
Q202	1323321	TRANSISTOR 2SD2216
Q207	1323321	TRANSISTOR 2SD2216
Q209	1323171	TRANSISTOR UN9213
Q210	1323171	TRANSISTOR UN9213
Q214	1323231	TRANSISTOR 2SB1462
Q216	1323231	TRANSISTOR 2SB1462
Q218	5328721	TRANSISTOR 2SD1328
Q219	5328721	TRANSISTOR 2SD1328
Q220	5328721	TRANSISTOR 2SD1328
Q221	5328721	TRANSISTOR 2SD1328
Q222	5326521	TRANSISTOR 2SA1576
Q223	1323231	TRANSISTOR 2SB1462
Q224	1323171	TRANSISTOR UN9213
Q225	1323321	TRANSISTOR 2SD2216
Q226	1323171	TRANSISTOR UN9213
Q227	1323171	TRANSISTOR UN9213
Q228	1323171	TRANSISTOR UN9213
Q229	1323231	TRANSISTOR 2SB1462
Q230	1323171	TRANSISTOR UN9213
Q231	1323171	TRANSISTOR UN9213
Q238	1323231	TRANSISTOR 2SB1462
Q239	1323321	TRANSISTOR 2SD2216
Q240	1323231	TRANSISTOR 2SB1462
Q241	1323321	TRANSISTOR 2SD2216
Q250	1323321	TRANSISTOR 2SD2216
Q251	1323171	TRANSISTOR UN9213
Q252	1323171	TRANSISTOR UN9213
Q257	1323321	TRANSISTOR 2SD2216
Q301	1323321	TRANSISTOR 2SD2216
Q302	1323171	TRANSISTOR UN9213
Q304	1323231	TRANSISTOR 2SB1462
Q305	1323171	TRANSISTOR UN9213
Q306	1323321	TRANSISTOR 2SD2216
Q307	1323301	TRANSISTOR 2SB1219
Q308	1323171	TRANSISTOR UN9213
Q309	5326521	TRANSISTOR 2SA1576
Q310	1323171	TRANSISTOR UN9213
Q311	1323171	TRANSISTOR UN9213
Q315	1323171	TRANSISTOR UN9213
Q316	1323171	TRANSISTOR UN9213
Q319	1323272	TRANSISTOR DTA144EE
Q320	1323171	TRANSISTOR UN9213
Q321	1323321	TRANSISTOR 2SD2216
Q322	1323321	TRANSISTOR 2SD2216
Q323	5326521	TRANSISTOR 2SA1576
Q324	1323272	TRANSISTOR DTA144EE
Q325	1323171	TRANSISTOR UN9213
Q326	1323171	TRANSISTOR UN9213
Q327	1323171	TRANSISTOR UN9213
Q328	1323171	TRANSISTOR UN9213
Q330	1323231	TRANSISTOR 2SB1462
Q331	1323171	TRANSISTOR UN9213
Q332	1323321	TRANSISTOR 2SD2216
Q335	1323171	TRANSISTOR UN9213
Q401	5328721	TRANSISTOR 2SD1328
Q402	5328721	TRANSISTOR 2SD1328
Q403	1323272	TRANSISTOR DTA144EE
Q404	1323171	TRANSISTOR UN9213
Q405	1323321	TRANSISTOR 2SD2216
Q553	5326206	TRANSISTOR FMC2
Q554	1323321	TRANSISTOR 2SD2216
Q555	1323171	TRANSISTOR UN9213
Q556	1323241	TRANSISTOR XP1213
Q557	1323321	TRANSISTOR 2SD2216
Q558	5326811	TRANSISTOR 2SB1001
Q559	1323321	TRANSISTOR 2SD2216
Q560	1323211	TRANSISTOR 2SB1121 (S/T)
Q561	1323321	TRANSISTOR 2SD2216
Q562	1323211	TRANSISTOR 2SB1121 (S/T)
Q563	1323321	TRANSISTOR 2SD2216
Q564	5326811	TRANSISTOR 2SB1001
Q565	1323321	TRANSISTOR 2SD2216
Q566	1323411	TRANSISTOR 2SB1124 (T/U)
Q567	1323252	TRANSISTOR XP4501
Q602	1323171	TRANSISTOR UN9213
Q603	1323321	TRANSISTOR 2SD2216
Q901	5326811	TRANSISTOR 2SB1001

SYMBOL-NO	P-NO	DESCRIPTION
Q902	1323321	TRANSISTOR 2SD2216
Q904	1323231	TRANSISTOR 2SB1462
Q905	1323321	TRANSISTOR 2SD2216
Q906	1323321	TRANSISTOR 2SD2216
Q907	1323321	TRANSISTOR 2SD2216
Q908	1323231	TRANSISTOR 2SB1462
Q909	1323231	TRANSISTOR 2SB1462
Q910	1323321	TRANSISTOR 2SD2216
Q911	1323171	TRANSISTOR UN9213
Q912	1323321	TRANSISTOR 2SD2216
Q913	1323321	TRANSISTOR 2SD2216
Q914	5326502	TRANSISTOR 2SD1766 (R)
Q915	1323321	TRANSISTOR 2SD2216
Q916	1323321	TRANSISTOR 2SD2216
Q917	1323171	TRANSISTOR UN9213
Q918	1323171	TRANSISTOR UN9213
Q1901	1322341	TRANSISTOR PT4810F
Q1902	1330091	IC SPI-345-01-G
Q1903	1330091	IC SPI-345-01-G
Q1904	1322341	TRANSISTOR PT4810F
T551	5148271	TRNSFORMER
L201	0773136	CHOKE COIL 220UH+-5%
L202	0773135	CHOKE COIL 180UH+-5%
L203	0773134	CHOKE COIL 150UH+-5%
L204	0773118	CHOKE COIL 10UH+-5%
L205	0773118	CHOKE COIL 10UH+-5%
L208	0773087	CHOKE COIL 10UH+-10%
L212	0773096	COIL, CHOKE 220UH
L213	0773096	COIL, CHOKE 220UH
L214	0773096	COIL, CHOKE 220UH
L215	0773096	COIL, CHOKE 220UH
L216	0773094	CHOKE COIL 100UH+-10%
L218	0773092	CHOKE COIL 47UH+-10%
L219	0773124	CHOKE COIL 27UH+-5%
L221	0773132	CHOKE COIL 100UH+-5%
L222	0773133	CHOKE COIL 120UH+-5%
L224	0773134	CHOKE COIL 150UH+-5%
L225	0773132	CHOKE COIL 100UH+-5%
L230	5159177	COIL 470UH
L232	0773121	CHOKE COIL 15UH+-5%
L301	0773087	CHOKE COIL 10UH+-10%
L302	0773087	CHOKE COIL 10UH+-10%
L303	0773087	CHOKE COIL 10UH+-10%
L304	0773092	CHOKE COIL 47UH+-10%
L305	0773092	CHOKE COIL 47UH+-10%
L306	0773092	CHOKE COIL 47UH+-10%
L307	0773132	CHOKE COIL 100UH+-5%
L310	0773087	CHOKE COIL 10UH+-10%
L311	0773123	CHOKE COIL 22UH+-5%
L312	0773087	CHOKE COIL 10UH+-10%
L401	0773092	CHOKE COIL 47UH+-10%
L551	5129321	CHOKE COIL
L552	5129322	CHOKE COIL
L553	0773085	COIL, CHOKE 4.7UH
L554	5129321	CHOKE COIL
L555	5129323	CHOKE COIL
L556	0773085	COIL, CHOKE 4.7UH
L557	5129323	CHOKE COIL
L558	0773085	COIL, CHOKE 4.7UH
L559	5129321	CHOKE COIL
L560	5129322	CHOKE COIL
L561	0773085	COIL, CHOKE 4.7UH
L562	0773092	CHOKE COIL 47UH+-10%
L563	0773092	CHOKE COIL 47UH+-10%
L564	0773089	COIL CHOKE 22UH

SYMBOL-NO	P-NO	DESCRIPTION
L565	0773087	CHOKE COIL 10UH+-10%
L566	0773085	COIL, CHOKE 4.7UH
L601	0773087	CHOKE COIL 10UH+-10%
L602	0773087	CHOKE COIL 10UH+-10%
L603	0773087	CHOKE COIL 10UH+-10%
L901	0773092	CHOKE COIL 47UH+-10%
L902	0773087	CHOKE COIL 10UH+-10%
L903	0773087	CHOKE COIL 10UH+-10%
L904	0773087	CHOKE COIL 10UH+-10%
L905	0773121	CHOKE COIL 15UH+-5%
L906	0773092	CHOKE COIL 47UH+-10%
X301	5778631	CRYSTAL
X601	5778621	CRYSTAL
X901	1930031	CRYSTAL
X902	1930041	CRYSTAL
BT901	4590892	HOLDER
CP301	5172524	DELAY LINE
CP302	5172533	DELAY LINE
CP303	5172334	FILTER
CP304	5172652	FILTER, BAND PASS
CP305	5172673	FILTER
CP306	5172515	FILTER
CP307	5172125	FILTER, BAND PASS
CP401	5172662	FILTER
CP402	5172424	FILTER
F551	5723232	FUSE
F554	5723231	FUSE 1.6A
JK200	5695291	SOCKT
LD1990	5381663	DIODE SLH34VT3
LD1991	5317351	LED
S001	5621912	SWITCH
S551	5635601	SWITCH
S552	5635601	SWITCH
S901	5634862	SWITCH
S902	5621912	SWITCH
S1901	5635461	SWITCH
S1902	5636111	SWITCH
S1950	5604732	FUNCTION SW
		CAMERA SECTION
C1001	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1002	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1004	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1005	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1009	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1010	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1011	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1013	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1014	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C1015	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1016	0893156	CERAMIC CHIP 39PF+-5% 50V
C1017	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1019	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1021	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1022	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1023	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1024	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1027	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1028	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1029	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1030	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1032	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1033	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1034	0893223	CERAMIC CHIP 0.047UF+80-20% 16
C1035	0893162	CERAMIC CHIP 100PF+-5% 50V

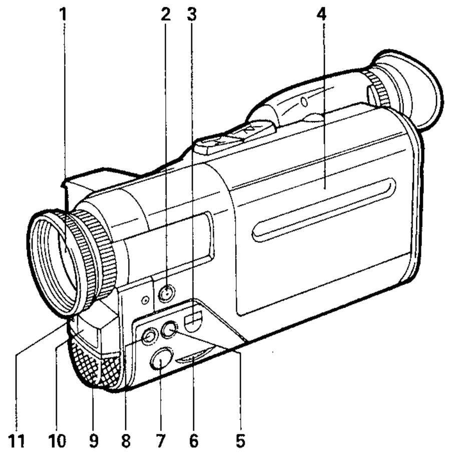
SYMBOL-NO	P-NO	DESCRIPTION
C1039	0893151	CERAMIC CHIP 15PF+-5% 50V
C1040	0893143	CERAMIC CHIP 5PF+-0.25% 50V
C1041	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1042	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1058	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1101	0893151	CERAMIC CHIP 15PF+-5% 50V
C1103	0893156	CERAMIC CHIP 39PF+-5% 50V
C1104	0893156	CERAMIC CHIP 39PF+-5% 50V
C1105	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1106	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1107	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1109	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1110	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1111	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1117	0893154	CERAMIC CHIP 27PF+-5% 50V
C1118	0202129	CERAMIC CHIP 0.022UF+80-20% 25
C1119	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1120	0893143	CERAMIC CHIP 5PF+-0.25% 50V
C1121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1122	0893234	CERAMIC CHIP 1500PF+80-20% 50V
C1123	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1124	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1125	0893154	CERAMIC CHIP 27PF+-5% 50V
C1126	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1127	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1128	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1129	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1130	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1134	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1135	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1136	0893158	CERAMIC CHIP 56PF+-5% 50V
C1137	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1138	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1139	0893175	CERAMIC CHIP 1000PF+-5% 50V
C1140	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1141	0893211	CERAMIC CHIP 1500PF+-10% 50V
C1142	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1143	0893223	CERAMIC CHIP 0.047UF+80-20% 16
C1144	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1145	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1146	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1147	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1148	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1149	0893062	CERAMIC CHIP 1UF+80-20% 16V
C1150	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1151	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1152	0893143	CERAMIC CHIP 5PF+-0.25% 50V
R1001	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R1002	0790036	CHIP RESISTOR 820 OHM+-5% 1/16
R1003	0790064	CHIP RESISTOR 100KOHM+-5% 1/16
R1004	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16
R1005	0790024	CHIP RESISTOR 100 OHM+-5% 1/16
R1006	0790066	CHIP RESISTOR 150KOHM+-5% 1/16
R1007	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R1008	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1010	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16
R1011	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1012	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1013	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16
R1015	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1017	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1018	0790035	CHIP RESISTOR 680 OHM+-5% 1/16
R1019	0790066	CHIP RESISTOR 150KOHM+-5% 1/16
R1022	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1025	0790066	CHIP RESISTOR 150KOHM+-5% 1/16
R1027	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16
R1028	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1030	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1031	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1037	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16
R1038	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1039	0790067	CHIP RESISTOR 180KOHM+-5% 1/16
R1042	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1053	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W
R1059	0790029	CHIP RESISITOR 270 OHM+-5% 1/1
R1062	0790024	CHIP RESISTOR 100 OHM+-5% 1/16
R1067	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1068	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1069	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1070	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1071	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1072	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1073	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1074	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1075	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1092	0103839	CHIP RESISTOR 4700HM+-5% 0.1W
R1093	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R1097	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1098	0104571	CHIP RESISTOR 3.9KOHM+-1% 1/16
R1099	0104558	CHIP RESISTOR 5.6KOHM+-1% 1/16
R1101	0790019	CHIP RESISTOR 47 OHM+-5% 1/16W
R1102	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16
R1104	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1105	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1106	0790034	CHIP RESISTOR 560 OHM+-5% 1/16
R1107	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1108	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1114	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1115	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1116	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1121	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1123	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1124	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1130	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1132	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1133	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1134	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1135	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1136	0790024	CHIP RESISTOR 100 OHM+-5% 1/16
R1137	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1138	0790064	CHIP RESISTOR 100KOHM+-5% 1/16
R1140	0790033	CHIP RESISTOR 470 OHM+-5% 1/16
R1144	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1145	0790026	CHIP RESISTOR 150 OHM+-5% 1/16
R1146	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1147	0790034	CHIP RESISTOR 560 OHM+-5% 1/16
R1148	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1149	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1150	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1151	0790034	CHIP RESISTOR 560 OHM+-5% 1/16
R1152	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1153	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1154	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1155	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1156	0104603	CHIP RESISTOR 560 OHM+-5% 1/32
R1157	0790034	CHIP RESISTOR 560 OHM+-5% 1/16
R1158	0790034	CHIP RESISTOR 560 OHM+-5% 1/16
R1159	0790024	CHIP RESISTOR 100 OHM+-5% 1/16
R1160	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1161	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W

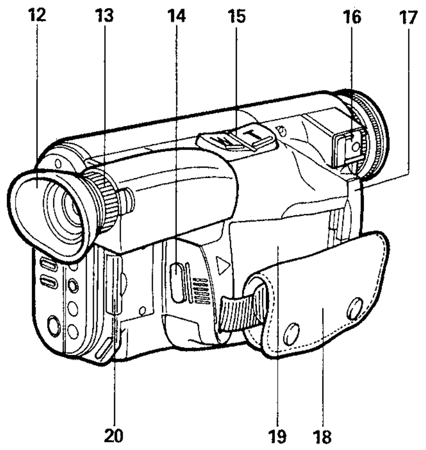
SYMBOL-NO	P-NO	DESCRIPTION
R1162	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1163	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1164	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1166	0790034	CHIP RESISTOR 560 OHM+-5% 1/16
R1167	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1168	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1170	0104549	CHIP RESISTOR 5.36KOHM+-1% 1/16W
R1171	0104552	CHIP RESISTOR 6.8KOHM+-1% 1/16
R1173	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1174	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1176	0790065	CHIP RESISTOR 120KOHM+-5% 1/16
R1177	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1178	0104565	CHIP RESISTOR 22KOHM+-1% 1/16W
R1179	0104566	CHIP RESISTOR 120KOHM+-1% 1/16
R1181	0104524	CHIP RESISTOR 5.49KOHM+-1% 1/1
R1182	0104568	CHIP RESISTOR 270 OHM+-1% 1/16
R1183	0104502	CHIP RESISTOR 820 OHM+-1% 1/16
R1184	0104554	CHIP RESISTOR 1KOHM+-1% 1/16W
R1185	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16
R1186	0790024	CHIP RESISTOR 100 OHM+-5% 1/16
R1187	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1188	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1189	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16
R1190	0790064	CHIP RESISTOR 100KOHM+-5% 1/16
R1193	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1195	0790064	CHIP RESISTOR 100KOHM+-5% 1/16
R1196	0790068	CHIP RESISTOR 220KOHM+-5% 1/16
R1197	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1198	0790071	CHIP RESISTOR 330KOHM+-5% 1/16
R1200	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1201	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1202	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1203	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1204	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1205	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16
R1206	0104585	CHIP RESISTOR 100KOHM+-5% 1/32
R1207	0104581	CHIP RESISTOR 1KOHM+-5% 1/32W
R1208	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1209	0104592	CHIP RESISTOR 220 OHM+-5% 1/32
R1210	0104592	CHIP RESISTOR 220 OHM+-5% 1/32
R1212	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1213	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R1214	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R1215	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1219	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1221	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1222	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1223	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1224	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
R1225	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16
R1226	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1227	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1228	0790021	CHIP RESISTOR 56 OHM+-5% 1/16W
R1229	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16
R1230	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1231	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16
R1232	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1233	0790064	CHIP RESISTOR 100KOHM+-5% 1/16
R1235	0790021	CHIP RESISTOR 56 OHM+-5% 1/16W
R1236	0790021	CHIP RESISTOR 56 OHM+-5% 1/16W
R1240	0790066	CHIP RESISTOR 150KOHM+-5% 1/16
R1241	0790064	CHIP RESISTOR 100KOHM+-5% 1/16
R1403	0790028	CHIP RESISTOR 220 OHM+-5% 1/16
D1004	5337353	DIODE MA132K
D1005	5337353	DIODE MA132K

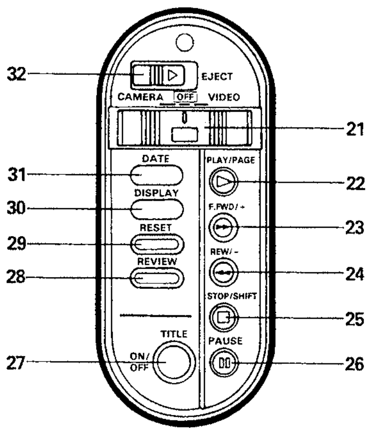
SYMBOL-NO	P-NO	DESCRIPTION
D1010	5337471	DIODE KV1470
D1011	5337354	DIODE MA133
D1101	5337451	DIODE RB715F
D1102	5337501	DIODE HVM17
D1103	5337354	DIODE MA133
D1104	5337501	DIODE HVM17
D1106	5337353	DIODE MA132K
D1107	5337354	DIODE MA133
IC1001	5318521	CCD IMAGE DEVICE ICX 059AK
IC1002	1365341	IC HA118144AF
IC1003	1351533	IC CXD1250N
IC1004	1365241	IC TG-F254009PN
IC1101	1365391	IC HD49306AF
IC1102	1354693	IC HG51A007FBA
IC1103	1354702	IC HG51A009A01FB
IC1104	1352671	IC HD49307
IC1105	1365781	IC HD6433378A01F
IC1106	1365611	IC XRM9021BF
IC1107	1365651	IC PST600G
IC1108	1365231	IC M62354GP
IC1110	1365311	IC S81350HG
Q1001	1323291	TRANSISTOR 2SC4617
Q1002	1323291	TRANSISTOR 2SC4617
Q1007	1323252	TRANSISTOR XP4501
Q1008	1323252	TRANSISTOR XP4501
Q1010	1323252	TRANSISTOR XP4501
Q1101	1323341	TRANSISTOR 2SC4691
Q1102	1323271	TRANSISTOR DTC144EE
Q1104	1323341	TRANSISTOR 2SC4691
Q1105	1323341	TRANSISTOR 2SC4691
Q1106	1323252	TRANSISTOR XP4501
Q1107	5326421	TRANSISTOR 2SC4081BR
Q1108	1323291	TRANSISTOR 2SC4617
Q1109	1323291	TRANSISTOR 2SC4617
Q1110	1323253	TRANSISTOR XP4401
X1001	5778191	CRYSTAL 28.57MHZ
X1101	1930011	CRYSTAL
X1102	1930091	CRYSTAL
X1103	5778841	CRYSTAL
BL1002	5172403	FILTER
BL1005	5172403	FILTER
BL1006	5172403	FILTER
BL1101	5172403	FILTER
BL1102	5172403	FILTER
BL1103	5172403	FILTER
BL1104	5172403	FILTER
BL1105	5172403	FILTER
BL1106	5172403	FILTER
BL1107	5172403	FILTER
BL1108	5172403	FILTER
BL1109	5172403	FILTER
CP1101	5172671	FILTER, BAND PASS
CP1102	5172732	FILTER
CT1001	5058576	CAPACTOR TRIMMER
C2004	0268437	POLYPROPYLENE 4700PF +-5%50V
C2005	0256871	ELECTROLYTIC 47UF 25V
⚠C2006	0249655	CERAMIC CHIP 1000PF+-10% 1000V
⚠C2007	0249656	CERAMIC CHIP 1000PF+-10% 500V
C2009	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2011	0209852	CERAMIC CHIP 180PF+-5% 50V
C2012	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2013	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2014	0268521	MYLAR 0.1UF+-10% 50V
C2015	0202151	CERAMIC CHIP 2200PF+-5% 50V
C2016	0893044	CERAMIC CHIP 0.01UF+-10% 50V

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
C2018	0893062	CERAMIC CHIP 1UF+80-20% 16V			
RT2001	5035204	SEMI VARIABLE 2.2MOHM			
RT2002	5030251	SEMI VARIABLE 1MOHM			
RT2003	5040103	SEMI VARIABLE 470 OHM			
R2001	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W			
R2002	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W			
R2003	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W			
R2004	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W			
R2005	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W			
R2006	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W			
R2007	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W			
R2008	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W			
R2009	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W			
R2011	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W			
R2012	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W			
R2013	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W			
R2014	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W			
R2015	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W			
R2016	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1			
R2017	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W			
R2018	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W			
R2019	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W			
R2020	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W			
R2021	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W			
R2022	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W			
R2024	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W			
R2025	0103874	CHIP RESISTOR 390KOHM+-5% 0.1W			
R2026	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W			
R2027	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W			
D2001	5337133	DIODE MA141K			
⚠D2002	5337321	DIODE MA199			
IC2001	1365881	IC HA118179FP			
Q2001	5323831	TRANSISTOR 2SD974			
Q2002	5326682	TRANSISTOR XN1B301			
⚠TF2001	5721352	FUSE			
T2001	5240566	TRANSFORMER			
L2001	0773003	COIL 47UH			
L2002	5244017	COIL			
⚠CS2001	5887003	SOCKET, CRT			

CONTROLS AND FUNCTIONS

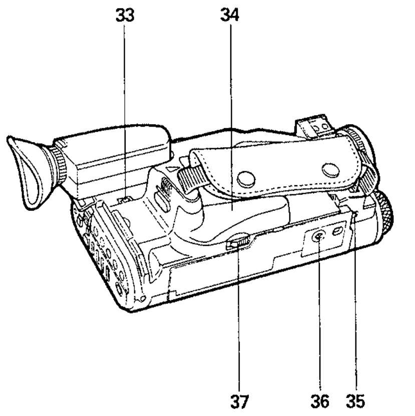


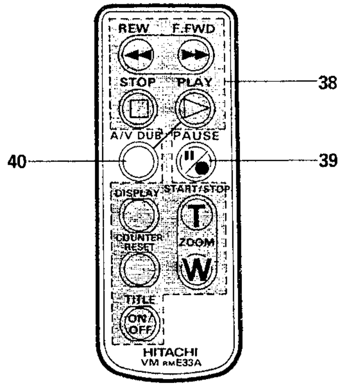




1. **Lens**
   F1.4 (6 ~ 48 mm) 8X power zoom lens features with auto focus and auto iris functions.
2. **ZOOM MODE Button**
   Use this button to switch the digital zoom feature. Usually press this button so that "ZM:1" appears in the viewfinder.
3. **B.LIGHT Button**
   When the subject is lit from behind, press and hold this button to conpensate for the back-lighting.
4. **Cassette Holder**
   Slide EJECT switch to open the cassette holder. Be aware of the cassette direction when inserting.
   NOTE: Power source must be connected to open the cassette holder.
5. **FADE Button**
   During recording you can add a professional touch to your recordings by fading in and out of the scenes. You can select the three fade modes – the white fade, wipe fade and zoom fade.
6. **FOCUS Control**
   For manual focusing, rotate this control to bring the subject into focus.
7. **FOCUS Select Button**
   Press this button to switch between automatic and manual focusing.
   If this button is pressed and "FOCUS M" appears in the viewfinder, the camera/recorder enters the manual focus mode. When "FOCUS M" is not displayed, focusing is automatic.
8. **D.FILTER (Digital Filter) Button**
   Press for a special-effect recording by changing the tone. If you press this button to display " S " in the viewfinder and start recording, for example, the picture will be recorded in sepia.
9. **Stereo Microphone**
   Sensitive to sounds coming from the direction in which the camera is pointed.
10. **Infrared Ray Receiving Section**
    Receives infrared rays from the remote control unit.
11. **Record Indicator**
    This indicator lights up to indicate that the camera/recorder is recording.
12. **Eye Cup**
    Pull out the eye cup all the way when using it and adjust the diopter control so that the subject is seen most clearly in the viewfinder.
    Always push in the eye cup after use.
13. **Diopter Control**
    To use the electronic viewfinder without eyeglasses on, turn this control for your optimum focus adjustment.
14. **Start/Stop Button**
    This button is used to control the camera/recorder. When this button is pressed with the camera/recorder set to the record/pause mode, the tape runs to start recording.
    When this button is pressed again, the tape stops and the camera/recorder enters the record/pause (stand-by) mode.
15. **Power Zoom Switch**
    This switch performs zooming electrically.
    "W": Picture becomes wider gradually.
    "T": Picture becomes telescopic gradually.
16. **Camera Light Shoe**
    Used to attach the camera light.
17. **AV OUT Jack (Behind the door)**
    Use the AV stereo output cord (Accessory No. 1) or RF output adapter (Optional Accessory) to connect this jack to a TV to view the pictures played back by the camera/recorder.
18. **Hand Strap**
    Adjust to best fit to your hand.
19. **Power Supply Attachment Section**
    Attach the battery (accessory no. 2) or external power adapter (accessory no. 6) here.
20. **Date/Time Battery Compartment**
    Pull the battery holder and install the date/time battery (provided).
21. **OPERATE Switch**
    This turns the camera/recorder on and off and also switches between the camera and VTR modes.
    Set the switch to "CAMERA" to turn the camera's power on and to "VIDEO" to turn the VTR's power.
    Press and hold the small red button in the switch to switch it.
22. **PLAY Button**
    Used for playback of tape.
    NOTE: When the camera/recorder is in record/pause (stand-by) mode, pressing and holding this button will play the tape at normal.
23. **F.FWD Button**
    Press this button during stop or rewind mode, and fast-forwarding starts. Press the button during playback of tape, and the tape is played back in the forward direction approximately 7 times faster than the normal speed to confirm the recorded content.
    Press PLAY button to return to normal playback mode or press STOP button to stop tape movement. Also use F.FWD button when setting the date/time.
    NOTE: You can also visually scan forward when the camera/recorder is in record/pause (stand-by) mode by pressing and holding this button.
24. **REW Button**
    Press this button during stop or fast forward mode, and fast-rewinding starts. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 5 times faster than the normal speed to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement. Also use REW button when setting the date/time.
    NOTE: You can also visually scan backward when the camera/recorder is in record/pause (stand-by) mode by pressing and holding this button.
25. **STOP Button**
    The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation. Also use STOP button when setting the date/time.

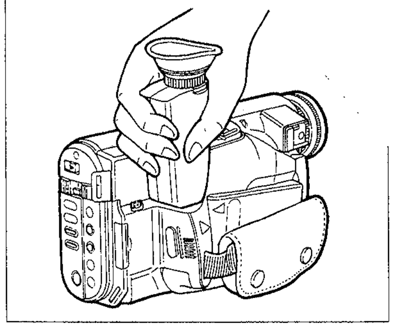
CONTROLS AND FUNCTIONS





26. **PAUSE Button**
    When this button is pressed in the playback mode, the tape stops and you can view a still picture. When this button is pressed again, the tape runs to resume playback.
27. **TITLE Button**
    Use this button to store a title in memory or recall the stored title and record it superimposed on the picture being shot.
28. **REVIEW Button**
    Used to review the last few seconds of the recorded segment in the record/pause mode.
29. **RESET Button**
    When the linear time counter is displayed in the viewfinder, pressing the button resets the counter to "0:00:00".
30. **DISPLAY Button**
    When this button is pressed, the displays in the viewfinder will change in sequence.
31. **DATE Button**
    Press this button to display the date and time in the viewfinder. Whenever the date and time appear in the viewfinder, they will be recorded on the tape.
32. **EJECT Switch**
    Operates with OPERATE either on or off, if a power source is connected to the camera/recorder.
33. **Hi8 Switch**
    Use to select Hi8 or normal 8 for recording. This switch has no effect during playback. Normally, set it to "AUTO". " Hi8 " appears in the viewfinder when the camera/recorder is recording or playing back in Hi8 mode.
34. **Grip Cover**
    Open this cover when attaching the battery or external power adapter.
35. **MIC Switch**
    This switch is used to reduce noise that occurs due to wind. Place the switch in the "NORM" position for normal use.
36. **Tripod Mount Screw**
    Use this screw to mount the camera/recorder on a tripod (generally available).
37. **BATT (Battery) EJECT Lever**
    Move this lever to open the grip cover when attaching the battery or external power adapter to the camera/recorder or detaching it.
38. **Camera/Recorder Control Buttons**
    These shaded buttons on the remote control function the same as those on the camera/recorder.
39. **PAUSE (START/STOP) Button**
    When this button is pressed during recording, the tape stops and the camera/recorder enters the record/pause (stand-by) mode. When this button is pressed again, the tape runs to resume recording. This button may be also used to display a still picture during playback mode.
40. **AV DUB Button**
    This button is used to record new audio and video in place of existing audio and video.

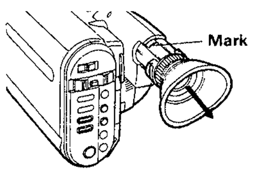
CAUTION:
Do not hold the unit by the e
when carrying as this could caus



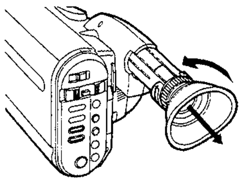
■ CLEANING THE INSIDE OF THE ELECTRONIC VIEWFINDER

If dust or foreign matter adheres inside the viewfinder, clean it by using the following procedure.

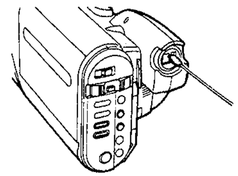
1. Pull out the eye cup to the position where a mark can be seen (up to a half where it is pulled out all the way).
   The side with the mark should be up.



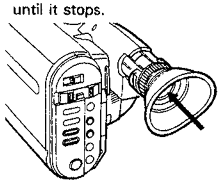
2. Turn the eye cup counter-clockwise until it stops, then pull it out to remove.



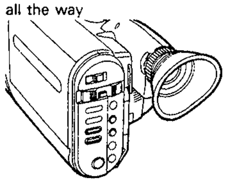
3. Clean the picture tube face and lens.
   To prevent scratching, use a soft non abrasive cloth, swab or lens cleaning paper.



4. Face the rib up as shown below and push the eye cup in until it stops.



5. Turn the eye cup clockwise until it stops, then push it in all the way



HITACHI

VM-H37E TK No.3670E,G TOKAI Consumer Electronics Divisio

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HITACHI

TK

No.3734E,G

VM-H37E

SERVICE MANUAL
Wartungsanleitung

V03814

SUPPLEMENT

This material is to supplement the VM-H37E service manual (No. 3670E,G) issued previously.
Use this manual in place of the VM-H37E service manual (No. 3670E,G) for the items listed in the table on the right. (The items marked * are newly added.)

CHAPTER	DETAILS
1	* Table of Differences of VM-H37E for Each Destination • COMPARISON WITH PREVIOUS MODEL
2	• Following items in DISASSEMBLY 2-1 How to Make Unloading (Fig. 2-1) 3-1-1 Cassette lid, opening right case, accessory shoe, electronic viewfinder (EVF) and right case (Fig. 3-1-2) 3-1-4 Autofocus circuit board, process circuit board, sensor circuit board, camera frame and lens block (Fig. 3-4)
3	• All items in MECHANISM ADJUSTMENT (including MAINTENANCE)
4	• All items in ELECTRICAL ADJUSTMENT except for EVF adjustment
5	• Changed schematic and circuit board diagrams (See CIRCUIT BOARD CHANGE HISTORY TABLE for details.)
6	• All EXPLODED VIEWS
7	• Parts list related to exploded views • Electrical parts that are different depending on the destination
8	* Circuit Description * TROUBLESHOOTING OF PARTS UNDER IC301 (Y MODULE IC) * TROUBLESHOOTING OF DC-DC CONVERTER * HOW TO USE THE SELF-DIAGNOSIS FUNCTION

ERGÄNZUNG

Diese Anleitung dient als Ergänzung zu der früher veröffentlichten Wartungsanleitung für das Modell VM-H37E (Nr. 3670E,G).
Verwenden Sie diese Anleitung gemeinsam mit der VM-H37E Wartungsanleitung (Nr. 3670E,G) für die in der rechten Tabelle aufgeführten Punkte. (Die mit "*" markierten Punkte wurden neu aufgenommen.)

KAPITEL	EINZELHEITEN
1	* Tabelle der Unterschiede des Modells VM-H37E für die einzelnen Bestimmungslanger • VERGLEICH MIT FRUHEREM MODELL
2	• Die folgenden Punkte unter DEMONTAGE 2-1 Entladen (Abb. 2-1) 3-1-1 Cassettenklappe, Öffnen des rechten Gehäuses, Aufsteckschuh, elektronischer Sucher und rechtes Gehäuse (Abb. 3-1-2) 3-1-4 Autofokus-Leiterplatte, Prozeßleiterplatte, Sensorleiterplatte, Kamerarahmen und Objektivblock (Abb. 3-4)
3	• Alle Punkte unter EINSTELLUNG DES BANDLAUFWERKES (einschließlich Autofokus-Einstellung)
4	• Alle Punkte unter ELEKTRISCHE ABGLEICHE ausgenommen EVF-Abgleich
5	• Geänderte Schaltplane und Leiterplatten-Diagramme (Für Einzelheiten siehe LEITERPLATTEN-ÄNDERUNGSTABELLE.)
6	• Alle EXPLOSIONSZEICHNUNGEN
7	• Stückliste für Explosionszeichnungen • Elektrische Teile, die sich gemäß Bestimmungsgebiet unterscheiden
8	* Schaltkreis-Beschreigung * STORUNGSBESEITIGUNG DER TEILE UNTER IC301 (Y MODUL IC) * STORUNGSBESEITIGUNG DES GS/GS-UMFORMERS * VERWENDUNG DER SELBSTDIAGNOSEFUNKTION

Hi8

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT
Änderungen der Technischen Daten und Teile im Sinne ständiger Verbesserung vorbehalten.

8mm VIDEO CAMERA/RECORDER
8-mm-Video-Kamerarecorder

December 1992 TOKAI Consumer Electronics Division

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CAMERA SECTION

Name of Board	Pattern No.	Applicable serial No.	Change of circuit points
SENSOR BOARD	155084−4	XXX00001 ~ XXX09800	
	155084−5	XXX09801 ~ XXX23200	
	155084−4	XXX23201 ~	
PROCESS BOARD	155084−4	XXX00001 ~ XXX09800	
	155084−5	XXX09801 ~ XXX23200	
	155084−4	XXX23201 ~	

VTR SECTION 〔For H37E〕

Name of Board	Pattern No.	Applicable serial No.	Change of circuit points
MAIN BOARD	155086−4	XXX00001 ~ XXX03100	
	155086−5	XXX03101 ~ XXX17600	· Change of six chip jumper for pattern. · R649,R683,R698,R699 (1005 chip 2.2Ω) ➡ R698,R699 (2125 chip 1Ω)
	155086−6	XXX17601 ~	· Deletion of SUB (I) circuit board.

VTR SECTION 〔For H37E(UK)〕

Name of Board	Pattern No.	Applicable serial No.	Change of circuit points
MAIN BOARD	155086−4	NOT USED	
	155086−5	XXX00001 ~ XXX00500	· Change of six chip jumper for pattern. · R649,R683,R698,R699 (1005 chip 2.2Ω) ➡ R698,R699 (2125 chip 1Ω)
	155086−6	XXX00501 ~	· Deletion of SUB (I) circuit board.

VTR SECTION 〔For H37E(AU)〕

Name of Board	Pattern No.	Applicable serial No.	Change of circuit points
MAIN BOARD	155086−4	NOT USED	
	155086−5	XXX00001 ~ XXX00100	· Change of six chip jumper for pattern. · R649,R683,R698,R699 (1005 chip 2.2Ω) ➡ R698,R699 (2125 chip 1Ω)
	155086−6	XXX00101 ~	· Deletion of SUB (I) circuit board.

CAUTION

Lithium battery; danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacuturer's instructions.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers'. Critical parts are marked with ⚠ in the schematic diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without any danger of electrical shock.

COMPARISON WITH PREVIOUS MODEL

← : Same as VM-E25E or VM-SP1E

ITEM	VM-E25E	VM-SP1E	VM-H37E
GENERAL			
POWER REQUIREMENTS	6V DC	←	←
POWER CONSUMPTION	7 W	6.5 W	7.5 W (FOCUS M)
DIMENSIONS (W X H X D mm)	105 X 107 X 199 (Horizontal)	129 X 129 X 227	80.5 X 104 X 238
WEIGHT	Approx. 770 gr	Approx. 1.1 kgr	Approx. 560 gr
OPERATION TEMPERATURE	0℃ to 40℃	←	←
OPERATION HUMIDITY	<80%	←	←
STORAGE TEMPERATURE	-20℃ to 50℃	←	←
VIDEO RECORDER SECTION			
FORMAT	8mm	←	Hi-8
RECORD/PLAYBACK SYSTEM	Two video record/ playback heads (+FE head)	←	Four video record/ playback heads (+FE head)
VIDEO SIGNAL	PAL colour & CCIR monochrome signals 625 lines	←	←
TAPE SPEED	SP: 20.05mm/sec. LP: 10.06mm/sec. (Playback only)	←	SP: 20.05mm/sec.
VIDEO INPUT	No	←	←
VIDEO OUTPUT	1.0Vp-p, 75 ohm	←	←
AUDIO INPUT	No	←	←
AUDIO OUTPUT	-8 dBs, less than 1K ohm	←	←
FAST FORWARD/REWIND TIME	Less than 10 minutes with P5-90 cassette	←	←
HEAD WHEEL	40 mm	←	26.7mm
BASIC CHASSIS TYPE	TL-R	←	SH
CAMERA SECTION			
SCANNING	625 lines/50 fields/ 25 frame	←	←
REQUIRED MINIMUM ILLUMINATION	6 lux	←	2 lux
CAMERA DEVICE	1/3" C.C.D	←	←
LENS DIAMETER	46 mm	←	34 mm
ZOOM RATIO/APERTURE	8:1 (6mm - 48mm)/f 2.0	←	8:1 (6mm - 48mm)/f 1.4
FEATURES			
WHITE BALANCE	AI Auto white balance	←	←
DIGITAL SIGNAL PROCESSOR	Yes	←	←
ELECTRICAL ZOOM	Yes (X64)	←	←
DIGITAL FILTER	No	←	Yes
AUTOFOCUS SYSTEM	VIDEO AF	←	←
PROGRAMME AE (SHUTTER SPEED)	Yes (AE/50/100/250/ 1000/2000/10000)	Yes (Programme AE only)	←
TITLER	Yes (2 pages)	←	←
NEG./POSI	No	←	←
TIME LAPSE/ANIMATION/ SELF TIMER RECORDING	Yes (Self timer only)	←	No
S-CONNECTOR INPUT/OUTPUT	No	←	Output only (On the AV output cable)
DC LIGHT CONNECTOR	No	←	Yes (Camera Light Shoe)
WIND (MIC) SWITCH	Yes	No	Yes
EXT. MICROPHONE JACK	No	←	←
EARPHONE (HEAD PHONE) JACK	No	←	←
WIRELESS REMOTE CONTROL	Yes	←	←

VM-H37E : LIST OF DIFFERENCES FOR EACH DESTINATION

No.	Item	UK	SW	Others than on left	Remarks
	Related to structure				
1	Accessory shoe	No	Yes	Yes	• The shape of the right case is different depending on the presence/ absence of the accessory shoe.
	Related to function				
2	AV (external) input function	No	Yes	No	• For a model without the AV input function, the circuit board or AV input cable should be modified during VTR section adjustment.
	Electrical parts				
3	PG901, Q913, Q914, R958, R959, R960, R961 F554 (on the Main PCB)	No	Yes	Yes	• Related to item 1.
4	Q200 (on the Main PCB)	Yes	No	Yes	• Related to item 2.

CAUTION

The function of PG601 pin 7 is not REMOTE in this model. Therefore, if the ATF-R jig (ATF jig) is connected to this model and SW2 on the jig is pressed, the record mode is not entered. (SW2 is invalid.)

2. DISASSEMBLY METHOD WHEN TROUBLE OCCURS

The following shows the disassembly method that should be taken when the camera/recorder does not operate normally. When it operates normally, refer to "3. NORMAL DISASSEMBLY METHOD".

2-1. How to Make Unloading (Figs. 2-1, 2-2)

Perform the following procedure to dismantle the camera/recorder if unloading is not performed normally (the camera/recorder cannot be set to the eject state).

1) Remove twelwe (12) screws. (See Fig. 2-1)
   Note: Remove eleven (11) screws if an accessory shoe is not provided (the screw marked ※ does not need to be removed).
2) Remove the right case in the direction of the arrow.
3) Disconnect three (3) connectors.
   Note: Disconnect two (2) connectors when an accessory shoe is not provided (the connector marked ※ does not need to be disconnected).

Advice 1:
If the defect is in the electric circuit system, apply 3V DC to pattern (A) of the main circuit board to unload the camera/recorder.
If the defect is in the tape transport mechanism, perform the following steps.

4) Remove one (1) screw.
5) Remove the front case in the direction of the arrow.
6) Disconnect one (1) connector from the back of the main circuit board.
7) Remove the IR/LED circuit board in the direction of the arrow.
8) Remove the operation switch unit in the direction of the arrow.

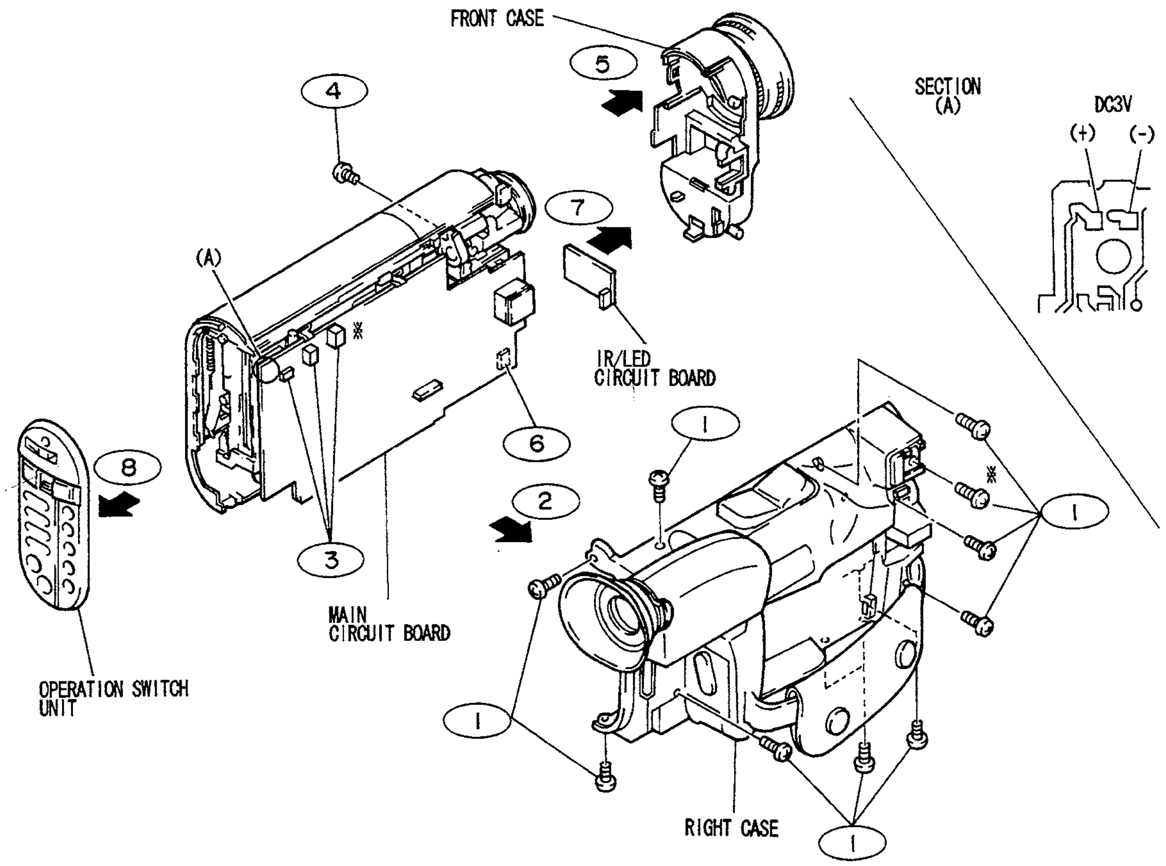


Fig. 2-1

3. NORMAL DISASSEMBLY METHOD

Perform the following to dismantle the camera/recorder if unloading is performed normally (the camera/recorder can be set to the eject state). If unloading cannot be done, refer to "2. DISASSEMBLY METHOD WHEN TROUBLE OCCURS".

3-1. Case and Circuit Board Removal

3-1-1. Cassette lid <CSL>, opening right case <RC>, accessary shoe <ACS> , electronic viewfinder (EVF) and right case <RC> (Figs. 3-1-1, 3-1-2)

(1) Cassette lid <CSL> (Fig. 3-1-1)

Caution 1: Be sure to perform the following to remove the cassette lid. If it is removed in a different way, the cassette holder may be damaged.
Caution 2: When reinstalling, perform the reverse procedure to removal described below.

1) Move the CSL in the direction of arrow (A) to release tab (B) from rib (C) of the CSL. (When reinstalling, hold tab (B), then insert it into rib (C) of the CSL.)
2) Move the CSL in the direction of arrow (D) to release tab (E) of the cassette holder from rib (F) of the CSL.
3) Move the CSL in the direction of arrow (G) to release two (2) tabs (H) of the CSL from section (J) of the cassette holder.

(2) Opening the right case <RC> (Fig. 3-1-2)

1) Remove the back-up battery holder.
2) Open the AV jack cover.
3) Remove twelve (12) screws.
   Note: Remove eleven (11) screws if an accessory shoe is not provided (the screw marked ※ does not need to be removed).
4) Open the right case in the direction of the arrow.
5) Disconnect three (3) connectors.
   Note: Disconnect two (2) connectors when an accessory shoe is not provided (the connector marked ※ does not need to be disconnected).

(3) Accessary shoe <ACS> (Fig. 3-1-2)

Note: This item is not necessary if the accessory shoe is not provided.
Caution: Open the RC in advance before removing the ACS.

1) Remove one (1) screw.

(4) Electronic viewfinder (EVF) and right case <RC> (Fig. 3-1-2)

Caution: Open the RC in advance before removing the EVF.

1) Remove two (2) screws.
   Caution: The EVF plate and plate spring are removed on their own when the EVF is removed.

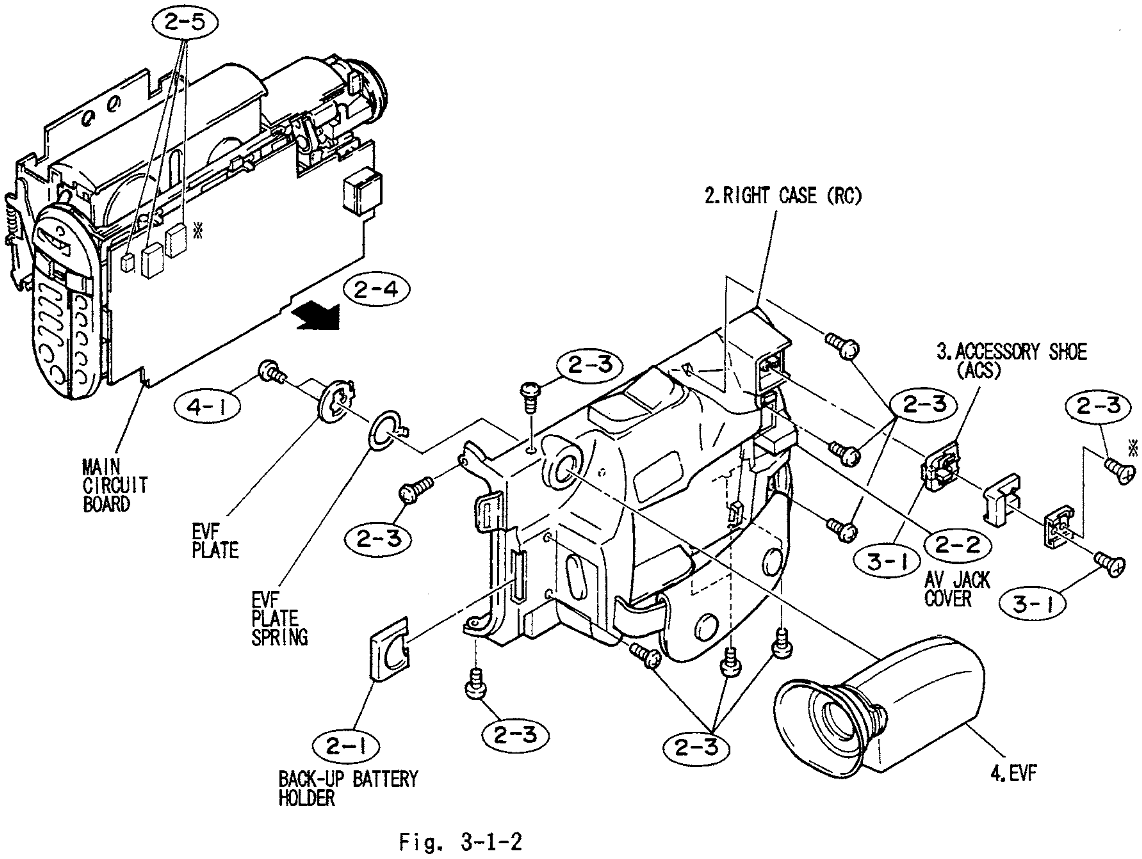


Fig. 3-1-2

3-1-4. Autofocus circuit board <AF CBA>, process circuit board <PC CBA>, sensor circuit board <SP CBA>, camera frame <CF> and lens block <LENS> (Fig. 3-4)

Components to remove in advance	Item
• Opening right case	3-1-1
• Operation switch unit <OSW>, front case <FC>, IR/LED circuit board <LR/LED CBA>, main circuit board <MAN CBA>, camera block <CAM>	3-1-3

(1) Autofocus circuit board <AF CBA> and process circuit board <PC CBA>

1) Disconnect one (1) flat cable.
2) Release one (1) tab.
3) Remove the AF CBA in the direction of the arrow. (The AF CBA and PC CBA are connected via an in-board connector.)
4) Remove the PC CBA in the direction of the arrow. (The SP CBA and PC CBA are connected via an in-board connector.)

(2) Sensor circuit board <SP CBA>

Caution: Remove the AF CBA and PC CBA in advance before removing the SP CBA.

1) Release four (4) tabs and remove the sensor shield cover.
2) Remove two (2) screws.
3) Remove two (2) screws.
   Caution 1: When the sensor cover is removed, the crystal filter and sensor rubber are removed on their own. Be careful not to damage the crystal filter.
   Caution 2: Install the crystal filter in the same direction as which it has been attached at factory if possible.
   attached at factory if possible.
4) Unsolder sixteen (16) points on the SP circuit board (IC1001).
5) Remove two (2) screws.

(3) Camera frame <CF> and lens block <LENS>

Caution 1: Remove the AF CBA and PC CBA in advance before removing the CF.

Caution 2: Remove the AF CBA, PC CBA and SP CBA in advance before removing the LENS.

1) Remove three (3) screws.
2) Widen the section of the CF that is engaged with the LENS slightly and remove the LENS from the CF.

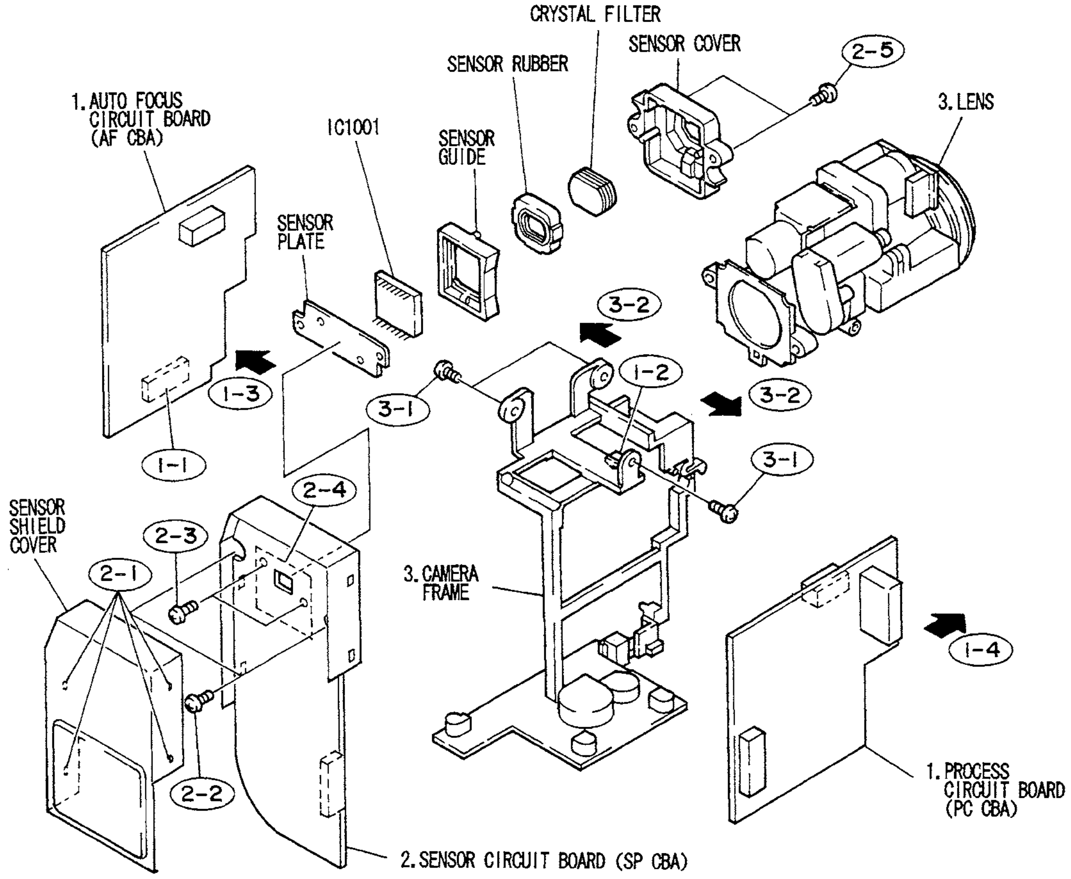

CRYSTAL FILTER
SENSOR COVER
SENSOR RUBBER
2-5
3.LENS
1.AUTO FOCUS CIRCUIT BOARD (AF CBA)
IC1001
SENSOR GUIDE
SENSOR PLATE
3-2
1-2
3-2
1-3
3-1
1-1
3-1
SENSOR SHIELD COVER
2-4
2-3
2-1
3.CAMERA FRAME
1-4
2-2
1.PROCESS CIRCUIT BOARD (PC CBA)
2.SENSOR CIRCUIT BOARD (SP CBA)

Fig. 3-4

CHAPTER 3

MECHANISM ADJUSTMENT

1. MAJOR MECHANICAL COMPONENTS

Letters in < > are the abbreviations of components used in this manual.

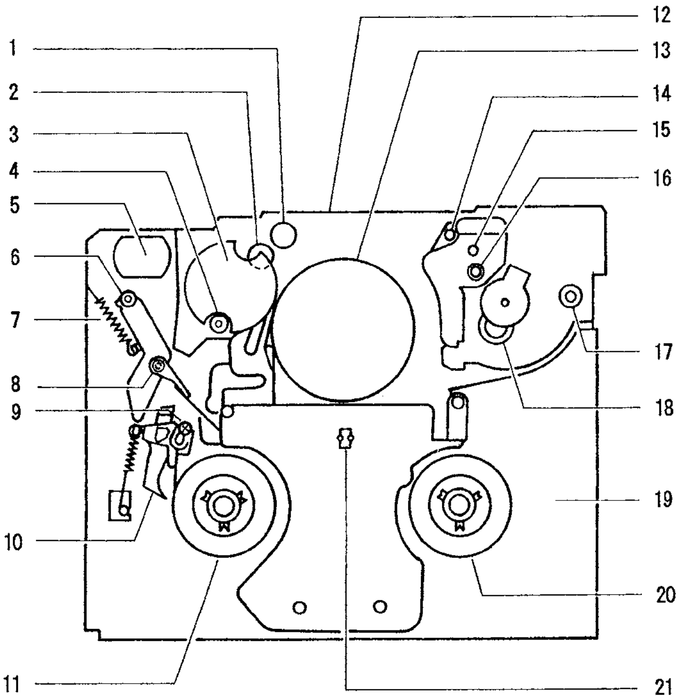


Fig. 1-1 Top View of Mechanism

1. TAKE-UP GUIDE ROLLER <TGR>
2. SUPPLY GUIDE ROLLER <SGR>
3. IMPEDANCE ROLLER<IMP>
4. SUPPLY GUIDE POLE <SGP>
5. LOADING MOTOR <LM>
6. TENSION POLE <T-ARM>
7. TENSION SPRING
8. TENSION BAND <TSB>
9. SCREW HOLDEING TENSION BAND HOLDER
10. TENSION BAND HOLDER
11. SUPPLY REEL DISK <SRD>
12. MAIN CHASSIS ASSEMBLY
13. CYLINDER <CYL>
14. TAKE-UP SLANT POLE <TSP>
15. HEIGHT ADJUST NUT
16. TAPE-UP GUIDE POLE <TGP>
17. PULL OUT ARM <POA>
18. PRESSURE ROLLER <PR>
19. SUB CHASSIS ASSEMBLY <SCA>
20. TAKE-UP REEL DISK <TRD>
21. END LED

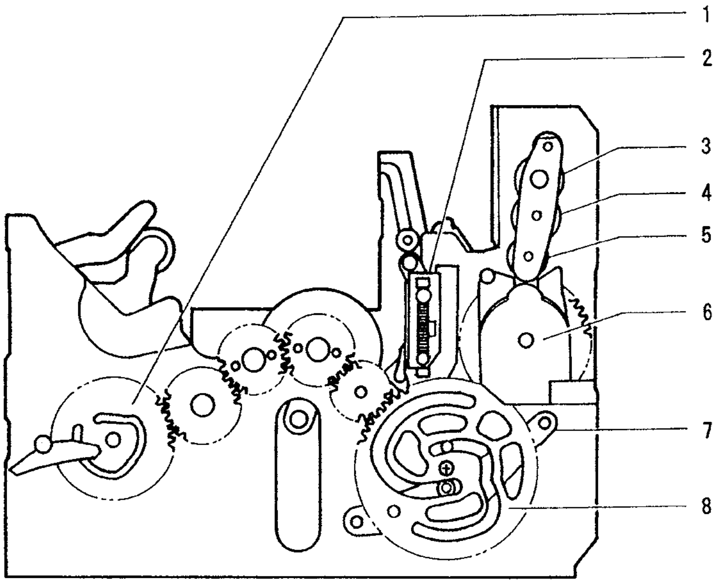


Fig. 1-2 Back of Subchassis

1. PRESSURE ROLLER CAM GEAR <PCG>
2. TAKE-UP SLIDER <TUS>
3. LOADING GEAR 1 <LG1>
4. LOADING GEAR 2 <LG2>
5. LOADING GEAR 3 <LG3>
6. MECHANISM STATE SWITCH <MSW>
7. CAM ARM <CA>
8. CAM GEAR <CG>

2. BEFORE STARTING ADJUSTMENT

- Be sure to set the camera/recorder to the unloading/stop mode when dismantling the tape transport block.
- Do not re-use washers once they have been removed.
- Remove the components shown beforehand, referring to CHAPTER 2 DISASSEMBLY. Reinstall the main circuit board and operation switch unit onto the tape transport block after removing the left case.

Components to remove in advance	Item
• Cassette lid, opening right case	3-1-1
• Top cover	3-1-2
• Operation switch unit, front case, main circuit board, tape transport block	3-1-3

- With this camera/recorder, mechanical adjustments (tape transport system check/adjustment) can be done with the unassembled VTR block (without connecting the camera block).
- To set the camera/recorder to the playback mode without loading a cassette, shut off the light striking the end LEDs in the subchassis and press the playback button on the operation switch unit. (Shut off the light striking the end LEDs in the eject state.)

3. PHASE MATCHING IN ASSEMBLY

Caution 1: Here, the phases of all components are aligned in the unloading/stop mode. Be sure to set the camera/recorder to the unloading/stop mode before dismantling the tape transport block.

3-1. Subchassis Assembly (Figs. 3-1, 3-2)

Caution: Be sure to match the phases of each component when reinstalling the loading motor <LM>, mechanism state switch <MSW>, loading gears 1 <LG1>, 2 <LG2> and 3 <LG3>, cam gear <CG>, take-up slider <TUS> and pressure roller cam gear <PCG>.

● Procedure of phase matching in assembly

1) Align mark (A) on the MSW and mark (F) on the MSW gear. Although the sizes of marks (A) and (F) are different in the illustration, they are actually the same. (See Fig. 3-1)
2) Align hole (C) and the hole in the subchassis. (See Fig. 3-2)
3) Align holes (A) and (B).
4) Align hole (D) and the hole in the subchassis.
5) Align the triangular hole in the subchassis and the bottom of the gear teeth.
6) Align hole (E) and the hole in the subchassis.
7) Check the relationship of the installation positions of the CG, TUS and cam arm <CA>.
8) Check that the phases of components in the main chassis are matched correctly, referring to the following item.
9) Install the subchassis assembly, kept in the above condition, onto the main chassis assembly.

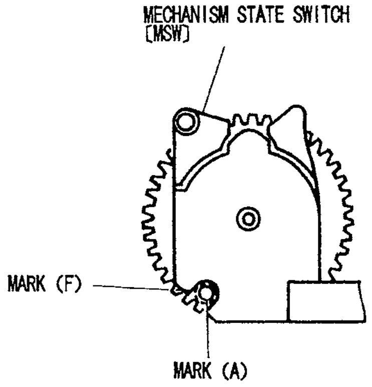


Fig. 3-1

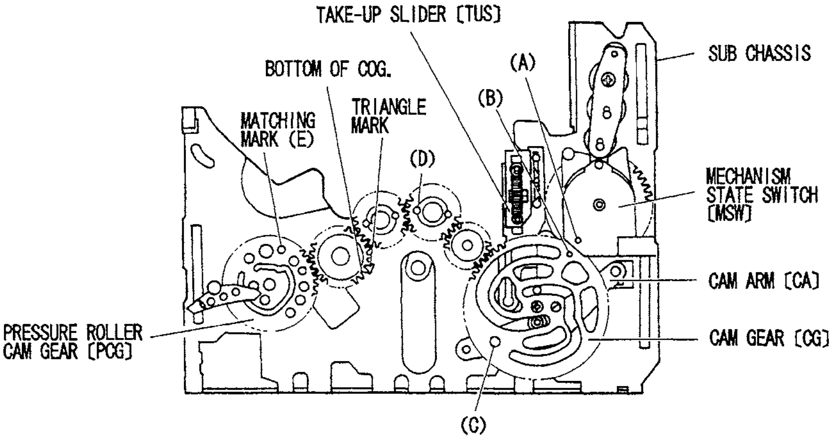


Fig. 3-2

3-2. Main Chassis Assembly (Fig. 3-3)

Caution: Be sure to match the phases of each component when reinstalling the loading impedance roller base <IRB>, ring gears 1 <RG1>, 2 <RG2> and 3 <RG3>, loading ring <LR> and subchassis assembly.

- **Procedure of phase matching in assembly**

1) Align hole (A) and the hole in the main chassis. (See Fig. 3-3)
2) Align holes (B) and (C).
3) Align hole (D) and concave section (E).
4) Check that concave section (F) is towards the RG1 axis.
5) Align hole (G) and the hole in the main chassis.
6) Check that hole (H) is towards arrow (J).

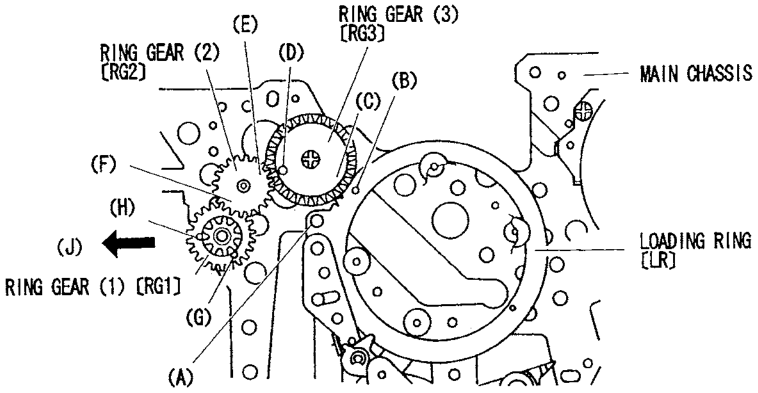


Fig. 3-3

4. TAPE TRANSPORT SYSTEM CHECK/ADJUSTMENT

The tape transport system is a generic term for the path from the supply reel disk to the take-up reel disk via the cylinder. The tape transport components, especially the components which come into direct contact with the tape, should be kept clean without damage, dust or oil, etc. adhering to the contact surfaces. The tape transport system is adjusted before shipment from the factory, so perform adjustments only when components of the transport system are replaced or adjustments of the transport system have drifted.

4-1. Tension Pole Position/Tension Torque Adjustments (Fig. 4-1)

Caution: Be sure to perform these adjustments after reinstalling the tension arm <T-ARM>, tension band <TSB>, tension spring and tension hook <TSH>.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
		• Shut off the light striking the end LEDs and set to the playback mode without loading a cassette	• Tension band holder
• Cassette torque meter (SRK-8T-212)	• Load a cassette torque meter	• Set to the playback mode.	• Tension spring

- **Adjustment procedure**

◆**Tension pole position adjustment (Fig. 4-1)**

1) Hook the tension spring to position (C) of the TSH.
2) Loosen screw (Z) holding tension band holder (Y).
3) Adjust position of (Y) so the edge of the hole in the subchassis matches (± 0.2mm) the semicircle on T-ARM.
4) Tighten screw (Z).
5) Perform playback and stop several times and check that the specification in step 3) is satisfied. If it is not satisfied, re-adjust the tension pole position.

◆**Tension torque adjustment (Fig. 4-1)**

1) Hook the tension spring to position (C) of the TSH.
2) Set the tension torque on the supply side to 5 - 6.5 g-cm.
   If it is more than 6.6 g-cm: Move the tension spring to position (D) of the TSH.
   If it is less than 5 g-cm: Move the tension spring to position (B) or (A).

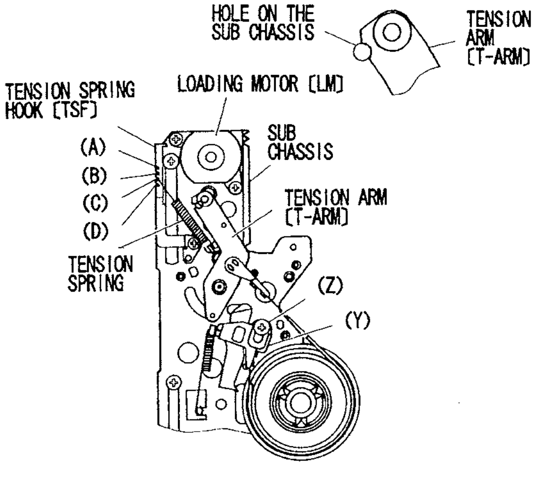


Fig. 4-1

4-2. Supply Guide Pole Height Check/Adjustment (Figs. 4-2, 4-3)

Caution: Be sure to check this item after reinstalling the supply guide pole <SGP> and impedance roller base <IRB>.
Basically, the SGP height should not be adjusted.
Adjust the SGP height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Special driver • Oscilloscope • ATF-R jig • Alignment tape	• PG601 on Main board • TP1 (SW25) on ATF-R jig • TP2 (GND) on ATF-R jig • TP3 (FM OUT) on ATF-R jig	• Load a blank tape and set to the playback mode. • ATF-R jig (SW1: OFF, SW3: OFF)	• Top of SGP

● Checking procedure

1) Check that there is no curling or creasing of tape around the flanges.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Synchronize the oscilloscope with TP1 (SW25) on the ATF-R jig.
4) Play the alignment tape in the reverse search mode and check that the areas between the waveforms are uniform.

● Adjustment procedure

1) Loosen hexagonal screw (A) holding the SGP. (See Fig. 4-3)
2) Screw in the SGP until it touches the base.
   Note: After screwing in the guide pole, check that the lower flange turns. If it cannot be confirmed, loosen the guide pole so the lower flange turns smoothly.
3) Check that the specification in step 4) in the checking procedure is satisfied.
4) If the above is not satisfied, turn the SGP by 90° to raise it.

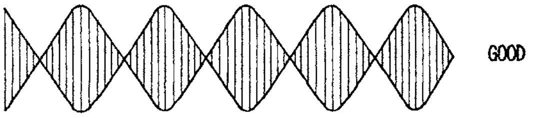


Fig. 4-2

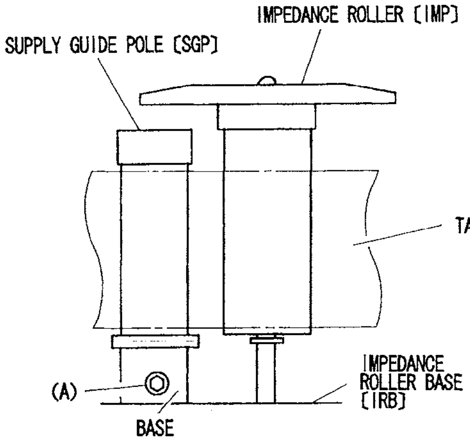


Fig. 4-3

4-3. Take-up guide pole height adjustment (Figs. 4-3, 4-4, 4-5)

Caution: Be sure to check this item after reinstalling the take-up guide pole <TGP> and guide roller rail <GRR>.
Basically, the TGP height should not be adjusted.
Adjust the TGP height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Special driver		• Load a blank tape and set to the playback mode.	• Height adjustment nut

● Adjustment procedure

1) Adjust the height adjustment nut so the tape is traveling the centre of the tape guide on the TOA. (See Figs. 4-4, 4-5)
   Note: The height adjustment nut cannot be adjusted in the screw-in direction.
2) After adjustment is completed, eject the cassette and reload it, then check the tape running position.

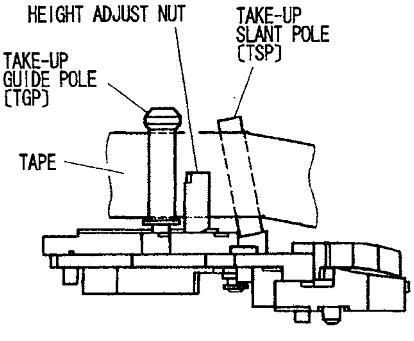


Fig. 4-4

4-4. Pull-out Arm Height Adjustment (Fig. 4-5)

Caution: Be sure to check this item after reinstalling the pull-out arm <POA>.
Basically, the POA height should not be adjusted.
Adjust the POA height only if it is abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Blank tape (P5-120) • Special driver		• Load a blank tape and set to the forward search mode.	• Top of POA • Slant adjustment screw

● **Adjustment procedure**

1) Turn the top of the POA's tape guide so the tape travels at the centre of the tape guide.
2) Unload the tape and then play it in the forward search mode.
3) Check that the tape runs at the centre of the tape guide.
4) Play the tape in the reverse search mode and check that the tape in runnig at the center of the tape guide. If it cannot be confirmed, adjust the SLANT ADJ. SCREW. (If the tape goes up, tighten the screw, and if it goes down, loosen the screw.)

Note: If the spacer have been inserted into section (A), remove them for adjustment. After adjustment is completed, coat sections (B) with screw locking compound.

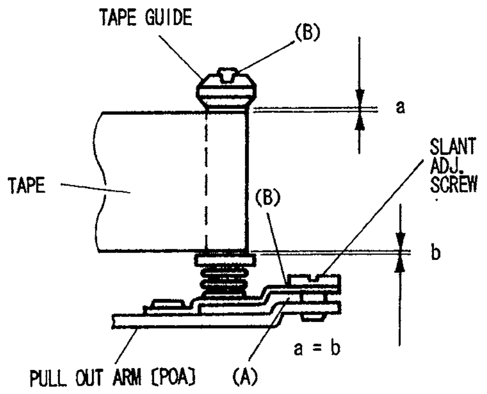


Fig. 4-5

4-5. Supply/Take-up Guide Roller Height Adjustment (Fig. 4-6)

Caution: Be sure to check this item after reinstalling the supply guide roller <SGR> and take-up guide roller <TGR>.
Basically, the height of the SGR and TGR should not be adjusted.
Adjust these heights only if they are abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Alignment tape • Oscilloscope • ATF-R jig • Special driver	• PG601 on Main board • TP1 (SW25) on ATF-R jig • TP2 (GND) on ATF-R jig • TP3 (FM OUT) on ATF-R jig	• Connect the ATF-R jig to PG601. • ATF-R jig (SW1: OFF, SW3: ON)	• Top of SGR • Top of TGR

● **Adjustment procedure**

1) Connect an oscilloscope to TP3 on the ATF-R jig.
2) Synchronize the oscilloscope with TP1 (SW25) on the ATF-R jig.
3) Load an alignment tape that has been completely rewound and set to the playback mode.
4) Adjust the voltage level control of the oscilloscope to set the maximum amplitude of the FM output to 4 graduations.
5) Set SW1 on the ATF-R jig to the ON position.
6) Turn RT1 on the ATF-R jig clockwise and set the centre of the FM waveform to 3 graduations. Check that the minimize amplitude of the FM waveform is 1.5 rgaduations or more.
7) If the specification in step 6) cannot be confirmed, adjust the heights of the SGR and TGR so that this specification can be satisfied.

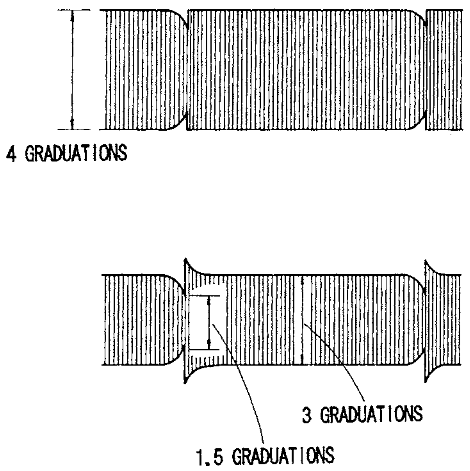


Fig. 4-6

5. Adjustment After Replacing the Cylinder (Fig. 5-1)

When the cylinder is replaced, the height relative to the guide roller drifts, therefore the tape transport system and servo circuit should be adjusted.
Check and adjust in the following order.

Test equipment/jigs	Test equipment/jigs connection points	State of VTR	Adjustment point
• Alignment tape • Oscilloscope • ATF-R jig • Special driver	• PG601 on Main board • TP1 (SW25) on ATF-R jig • TP2 (GND) on ATF-R jig • TP3 (FM OUT) on ATF-R jig	• Connect the ATF-R jig to PG601. • ATF-R jig (SW1: OFF, SW3: ON, RT1: mechanical centre)	• Top of SGR • Top of TGR

● Adjustment procedure

1) Load an alignment tape and set to the playback mode.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Synchronize the oscilloscope with TP1 (SW25) on the ATF-R jig.
4) Adjust the voltage level control of the oscilloscope to set the maximum amplitude of the FM output to 4 graduations. (See Fig. 5-1)
5) Set SW1 on the ATF-R jig to the ON position.
6) Turn RT1 on the ATF-R jig clockwise and set the centre of the FM waveform to 3 graduations. Check that the minimum amplitude of the FM waveform is 1.5 graduations or more.
7) If the specification in step 6) cannot be confirmed, adjust the heights of the SGR and TGR so the specification in step 6) can be satisfied.
8) Perform the following electric adjustments, referring to CHAPTER 4.
   - Head switching point
   - Recording level adjustment

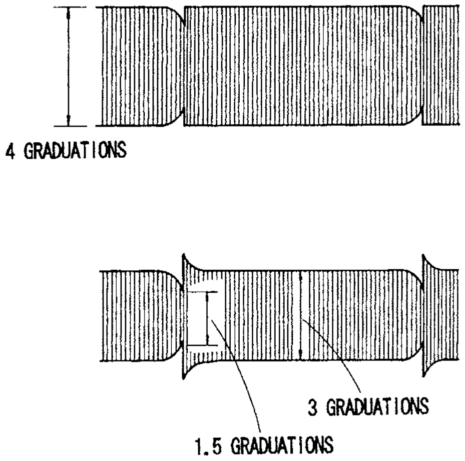


Fig. 5-1

6. CHECKING THE TORQUE

There are two types of cassette torque meter.
Choose the applicable one for the measurement to be performed.

Item	VTR mode	Measured reel disk	Torque value	Torque cassette used
Take-up torque	Playback	Take-up	7-13 g-cm	SRK-8T-212 SRK-8T-232
Rewind torque	Reverse search	Supply	28-40 g-cm	SRK-8T-232
Take-up brake torque	Reverse search to stop	Take-up	10 g-cm or more	SRK-8T-212 SRK-8T-232
Slack removal torque	Unloading	Supply	28-40 g-cm	SRK-8T-232

MAINTENANCE/INSPECTION

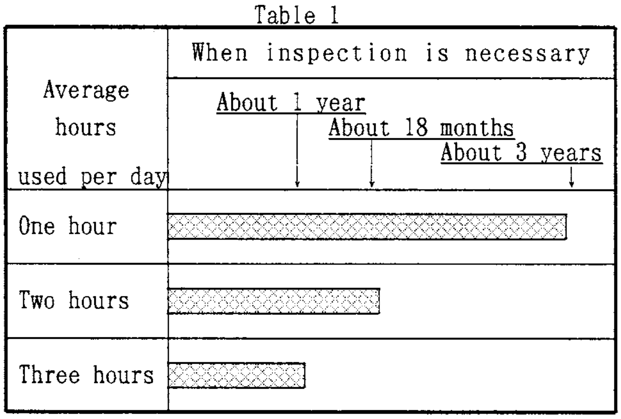
1. REQUIRED MAINTENANCE

The mechanical block (tape transport system) in an 8mm video camera/recorder uses very precise components. If any of these components is worn or dirty, the symptoms will be the same as if the component is defective.
To ensure a good picture, the tape transport system must be cleaned and lubricated periodically, and worn-out components must be replaced.
The tape transport system is a general term for the sections (components) with which the tape is in contact.

2. SCHEDULED MAINTENANCE

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the 8mm video camera/recorder and the environment in which it is used. But, in general home use, a good picture will be maintained if inspection and maintenance are done every 1,000 hours.
Table 1 shows the relation between the time used and inspection period.

Table 1



3. CHECK BEFORE STARTING REPAIRS

The following faults (see Table 2) during playback may be remedied when the tape transport system is cleaned and lubricated. Check the conditions of cleanliness of the unit and the need for lubrication.
If from that you determine that the unit is ready for inspection and maintenance, check the components in Table 2.

Table 2

Defective phenomenon during play	Inspection location
Poor picture S/N, No color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, in tape transport system or/and on cylinder
Vertical jitter (shaking)	Dirt on video head or in tape transport system
Low volume or sound distorted	Dirt on video head or worn video head

4. TOOLS NEEDED FOR INSPECTION AND MAINTENANCE

① Head cleaning kit
② VTR oil kit
③ Ethyl alcohol (ethanol)
④ Gauze
⑤ Cleaning tape
NTSC: Maxell 8M-CL MCA (dry type)
PAL: Maxell 8M-CLX (dry type)

Table 3 Locations for Greasing and Lubricating using the Oil Kit

Name	Using locations
Sonic Slidas Oil (#1600)	Lubricate low-speed rotating sections
Froil (G31-SAY)	Grease metal components or molded sections subject to light load
Lock paint	Fix adjustment screws and nuts
Pan motor oil	Do not use.
Hitazol	Do not use.

The above VTR oil kit and head cleaning kit are those used conventionally (for VHS and VHS-C recorders).
Always use these kits for maintenance.

5. MAINTENANCE PROCEDURES

5-1. Cleaning

(1) Cleaning video heads

First use a specified cleaning tape. Before using it, read its instruction sheet carefully. If the dirt on the video heads is too stubborn to be removed by tape, use the head cleaning kit by the following procedure. (See Fig. A)

1) Moisten the chamois leather on the cleaning stick with cleaning fluid.
2) Touch the chamois leather on the cleaning stick against the head tip and gently turn the upper cylinder to the left and right.

Caution: Do not move the cleaning stick vertically or/and make sure that only the chamois leather on the cleaning stick comes into contact with the head tip. Otherwise, the head tip could be damaged.

(2) Cleaning the tape transport system

Moisten gauze with ethyl alcohol and use it to wipe the surfaces of components which come into contact with the tape.

Caution: Be careful that the tape transport components are not damaged nor deformed by cleaning.

5-2. Lubricating Sonic Slidas Oil (#1600)

(1)Procedure

Use the oiler to apply one or two drop of Sonic Slidas oil to the specified sections. Refer to the exploded views in service manuals for lubricating locations.

Caution: Do not use too much oil because it may spill over or leak, coming into contact with rotating parts and causing slippage or other defects.
If too much oil is applied, wipe clean using gauze moistened with ethyl alcohol.

(2) Periodic lubrication

Lubricate specified locations every 1,000 hours.

5-3. Greasing the Froil (G31-SAY)

(1) Procedure

Apply Froil with a stick or brush to the specified locations. Refer to the exploded views in service manuals for the greasing locations.

Caution: Do not use excess Froil. It may come into contact with the tape transport parts and may cause defects.
Wipe off any excess using gauze moistened with ethyl alcohol.

(2) Periodic greasing

Grease specified locations every 5,000 hours.

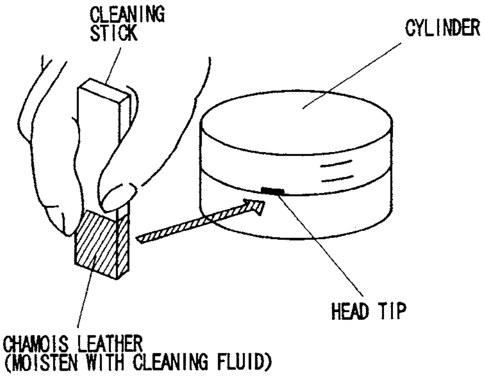


Fig. A

SH MECHANISM

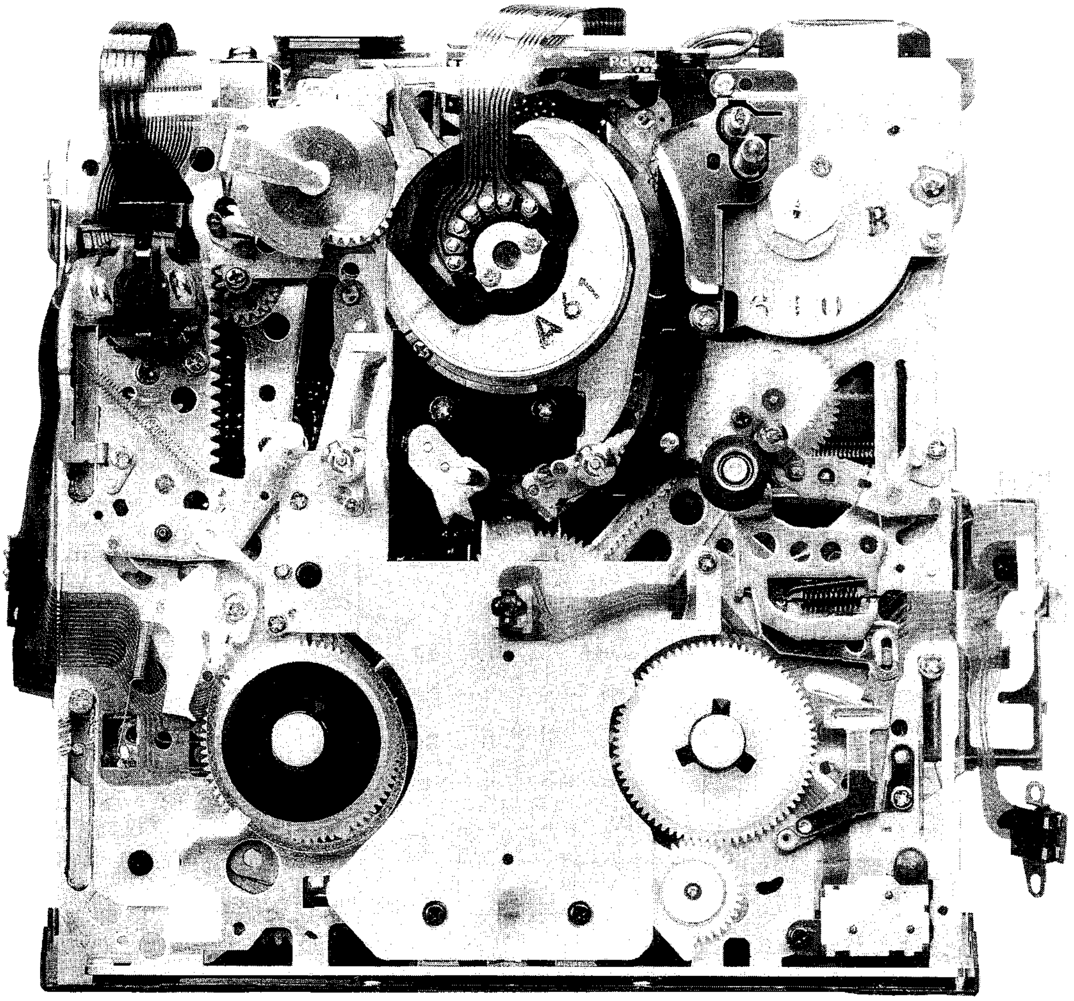


Fig. B

ELECTRICAL ADJUSTMENT

Note 1: Use a personal computer for camera adjustments other than the following.
- VCO Lock Voltage Confirmation

Note 2: The digital adjustment programme for the camera is called the MAP (Manual Adjustment Programme).

Note 3: DSP is an abbreviation for the digital signal processor.

1. CONNECTION FOR ADJUSTMENT

Remove the components, etc. listed below first, referring to CHAPTER 2 DISASSEMBLY.
(See Fig. 4-1)

Note 1: It is not necessary to remove cases for digital adjustment.

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette lid, Opening the Right Case, Right Case	3-1-1

Note 2: To perform the camera analogue and electronic variable resistor adjustment, remove the following components and then use an extension cable to connect the camera/recorder and test equipment so the camera and VTR blocks can be adjusted.

ORDER FOR REMOVING PARTS	ITEM No.
• Operation Switch Unit, Front Case, IR/LED Circuit Board, Main Circuit Board, Camera Block	3-1-3

Note 3: If it is necessary to display operation modes, connect the EVF.

2. CAMERA SECTION ADJUSTMENT

2-1. CIRCUIT BOARD LOCATIONS AND ADJUSTMENT SERVICE POSITION

1. Sensor Circuit Board
2. Autofocus Circuit Board
3. Process Circuit Board

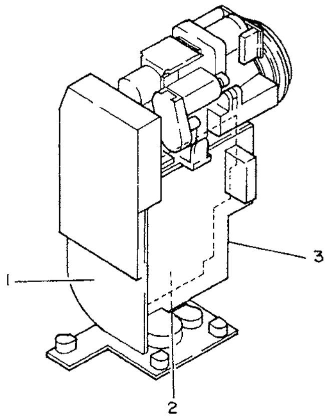


Fig. 2-1

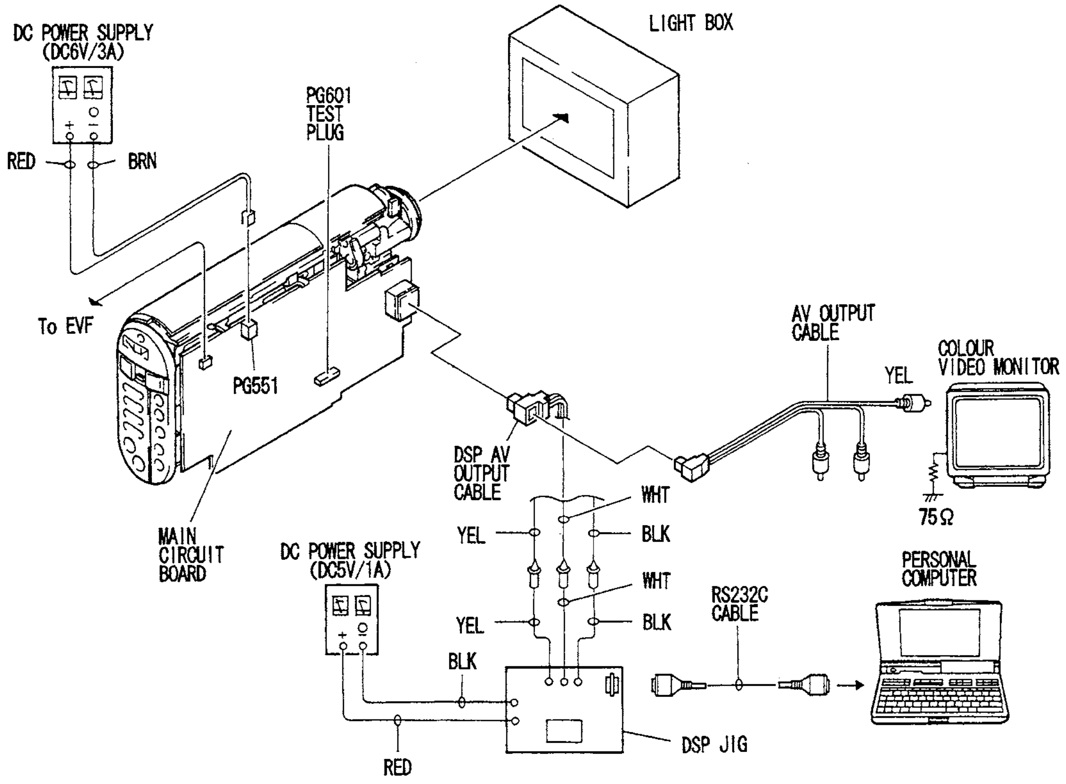

DC POWER SUPPLY (DC6V/3A)
RED
BRN
PG601 TEST PLUG
LIGHT BOX
To EVF
PG551
MAIN CIRCUIT BOARD
DSP AV OUTPUT CABLE
WHT
YEL
BLK
WHT
YEL
BLK
BLK
DC POWER SUPPLY (DC5V/1A)
RED
DSP JIG
RS232C CABLE
PERSONAL COMPUTER
AV OUTPUT CABLE
YEL
COLOUR VIDEO MONITOR
75Ω

Fig. 1-1

2-2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

- Test Equipment
  Oscilloscope (dual trace)
  [Vectorscope]
  Digital Voltmeter (DVM)
  Frequency Counter
  Colour Video Monitor
- Charts, etc.
  Camera Adj. Floppy Disk
  Personal Computer
  Personal Computer 9-pin or 25-pin Cable
  DSP Jig
  DSP AV Output Cable
  Grey Scale Chart
  Colour Bar Chart
  Resolution Chart
  Backfocus Adjustment Chart
  AF (Autofocus) Inspection Chart
  Light Box (3100°K)
  Light Balancing Filter C12
  DC Power Supply (DC6V/3A)
  DC Power Supply (DC5V/1A)

2-3. ADJUSTMENT CONDITION

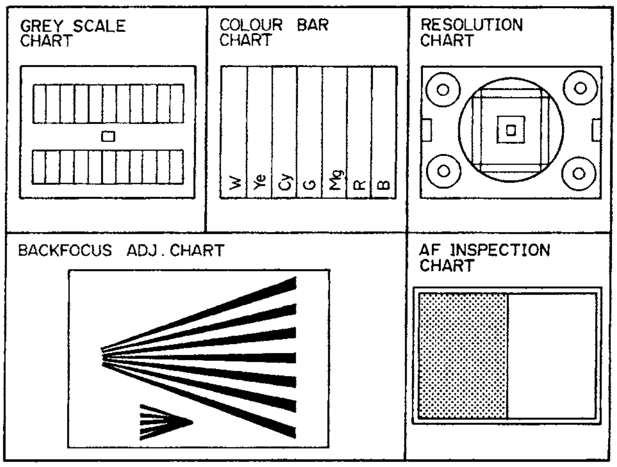
1) Check that the VTR section has been adjusted correctly before adjusting the camera section.
2) Use a light box with minimum flickering. Control the colour temperature of the light box strictly.
3) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
4) When using the video out (AV OUT) to perform adjustment, be sure to terminate the AV OUT jack with 75 ohms.
5) Place the chart (light box) 40cm away from the camera (lens surface) when otherwise not specified.
6) Point the camera at the chart to fill the video period when otherwise not specified.
7) Use the 10:1 probe of the oscilloscope when otherwise not specified.
8) When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10µs/div.

2-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ..... "CAMERA" position
- DATE .... Not Display mode
- DISPLAY .... Not Display mode
- TITLE .... Not Display mode
- D.FILTER .... Normal mode
- FADE .... Normal mode
- FOCUS .... Manual mode

2-5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 2-1


GREY SCALE CHART
COLOUR BAR CHART
W
Ye
Cy
G
Mg
R
B
RESOLUTION CHART
BACKFOCUS ADJ. CHART
AF INSPECTION CHART

2-6. ADJUSTMENT COMPONENTS LOCATIONS

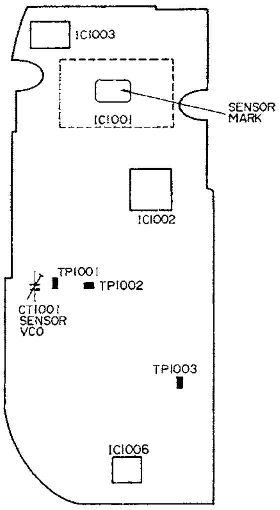

IC1003
IC1001
SENSOR MARK
IC1002
TP1001
TP1002
CT1001 SENSOR VCO
TP1003
IC1006

Fig. 2-2 SENSOR (SP) Circuit Board [Side-A]

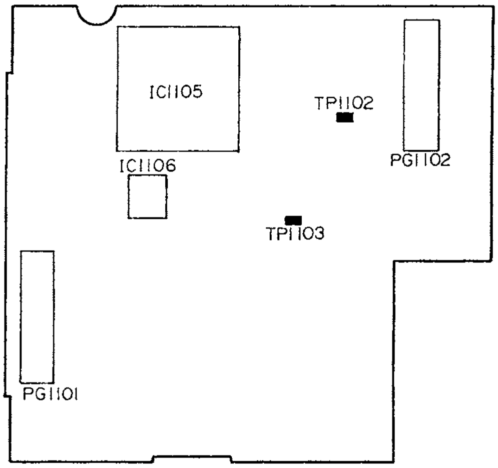

IC1105
TP1102
PG1102
IC1106
TP1103
PG1101

Fig. 2-3 Process Circuit Board [Side-A]

2-7. ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE CAMERA BLOCK

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are replaced.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Caution : When EEP ROM or the process circuit board is replaced, initialize the EEP ROM, referring to "2-8-3 Initial Setting by Model", then perform all the digital adjustments.

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		SENSOR C.B.A	PROCESS C.B.A	AUTO FOCUS	IC1001	IC1002	IC1004	IC1101
CAMERA ANALOGUE AND ELECTRIC VARIABLE RESISTOR ADJUSTMENT								
(1)	Sub Carrier Frequency Confirmation/ Adjustment		●					
(2)	VCO Lock Voltage Confirmation/ Adjustment		●					
(3)	Sensor VCO Lock Voltage Confirmation/Adjustment	●					●	
(4)	Sensor Drive Pulse and Sub Voltage Confirmation/Adjustment	●	●		●			
(5)	Hall Gain Adjustment	●	●	●	●			
CAMERA DIGITAL ADJUSTMENT								
(1)	Auto Iris Control Adjustment	●	●	●	●	●		●
(2)	Iris Calibration Adjustment	●	●	●	●	●		●
(3)	Blue Matrix Adjustment	●	●		●	●		●
(4)	White Balance Adjustment	●	●		●	●		●
(5)	Chroma Gain Adjustment	●	●		●	●		●
AUTOFOCUS ADJUSTMENT								
(2)	Auto Focus Gain Adjustment	●		●	●			
(3)	Zoom Trace Adjustment	●		●	●			

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		IC1103	IC1106					
CAMERA ANALOGUE AND ELECTRIC VARIABLE RESISTOR ADJUSTMENT								
(1)	Sub Carrier Frequency Confirmation/ Adjustment	●	●					
(2)	VCO Lock Voltage Confirmation/ Adjustment	●	●					
(3)	Sensor VCO Lock Voltage Confirmation/Adjustment							
(4)	Sensor Drive Pulse and Sub Voltage Confirmation/Adjustment		●					
(5)	Hall Gain Adjustment		●					
CAMERA DIGITAL ADJUSTMENT								
(1)	Auto Iris Control Adjustment		●					
(2)	Iris Calibration Adjustment		●					
(3)	Blue Matrix Adjustment		●					
(4)	White Balance Adjustment		●					
(5)	Chroma Gain Adjustment		●					

2-8. CAMERA DIGITAL AND ELECTRIC VARIABLE RESISTOR ADJUSTMENT

Note 1: The digital adjustment programme for camera is called the MAP (Manual Adjustment Programme).

Note 2: To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera recorder and jigs.

2-8-1. Connections for Adjustment

Connect the camera/recorder, DSP jig, personal computer, power supply, etc. as shown in Fig. 1-1.

Note 1: Check that the camera/recorder is turned on.

2-8-2. How to Start the Adjustment Programme (MAP)

Note 1: The following describes an example of the instructions of the personal computer and the menu display; they are different depending on the personal computer manufacturer and model.
Refer to the instruction manual of personal computer.

1) Turn the personal computer on and start the MS-DOS system. (Fig. 2-11)

Note 2: Refer to the instruction manual of the personal computer for how to start the computer.

2) Load the camera adjustment floppy disk into disk drive B and press B : then ENTER . (B may be small letter.) (Fig. 2-12)

Note 3: If the camera adjustment floppy disk is loaded into disk drive A, press A : then ENTER .

3) Press M A P ␣ I B M (SPACE) 1 then ENTER (MAP and IBM may be small letters). The digital adjustment programme (MAP: Manual Adjustment Programme) starts and the MODEL SELECT shown Fig. 2-14 appears.

Note 4: When you use a personal computer with two serial interface connectors and connect the DSP jig to serial interface connector 2, press MAP_IBM 2.

4) Select the number accodding to the model. If ESC (escape) is pressed, the display before the MAP starts (MS-DOS) is restored.

Note 5: If you specify the wrong model, press ESC (escape) to restore the MODEL SELECT display, then specify the correct model.

Note 6: If you select number without a model name by mistake, the message shown in Fig. 2-16 will appear in the computer's display. Press any key to return the display to Fig. 2-14 (MODEL SELECT).

Note 7: If there are more than 5 models and P is pressed, the computer's display changes to the next page.

```
F>
```

Fig. 2-11

↓

LOAD THE CAMERA ADJ. FLOPPY DISK INTO DISK DRIVE B

↓

Press B : ENTER

↓

```
F>B:
B>
```

Fig. 2-12

↓

Press M A P ␣ I B M (SPACE) 1 ENTER

↓

```
F>B:
B>MAP_IBM 1
```

Fig. 2-13

MODEL SELECT

↓

```
************************************************
**************** MODEL SELECT *****************
************************************************

              [1]    XXXXXXXX
              [2]    XXXXXXXX
              [3]    XXXXXXXX
              [4]    XXXXXXXX
              [5]    XXXXXXXX
              [P]    NEXT SELECTION
              [ESC]  END

      Please select the type of the set.
        Hit [1] - [5] or [P] or [ESC]
```

Fig. 2-14

↓

Press numeric key

↓

Refer to "2-8-3. Initial Setting by Model" for INITIALIZE EEPROM.

Refer to "2-8-4. Electric Variable Resister Adjustment Procedure" for ELECTRIC VARIABLE RESISTOR.

Refer to "2-8-5. Digital Adjustment Procedure" for ADJUSTMENT.

Refer to "2-8-6. Autofocus Adjustment Procedure" for AUTO FOCUS.

MAIN MENU

```
***********************************************
**************** MAIN MENU ******************
***********************************************
        [A]    INITIALIZE EEPROM
        [B]    ELECTRIC VARIABLE RESISTOR
        [C]    ADJUSTMENT
        [D]    AUTO FOCUS
        [ESC]  END
Please select [A] or [B] or [C] or [D]or [ESC]
```

Fig. 2-15

MESSAGE WHEN OPERATED BY MISTAKE

```
        Can not find the DATA FILE
           **** HIT ANY KEY ****
```

Fig. 2-16

2-8-3. Initial Setting by Model

Note 1: This item describes how to initialize the EEP ROM. Be sure to perform this item after replacing EEP ROM or the process circuit board. When other components are replaced, normally, it is not necessary to initialize the EEP ROM.
Press ESC (escape) to return the computer's display to MAIN MENU.

1) Start the MAP, referring to "2-8-2. How to Start the Adjustment Programme (MAP)".
2) Press A to select INITIALIZE. (Figs. 2-17, 2-18)
3) If there are no abnormalities in the camera/recorder, the message shown in Fig. 2-18 is displayed in the computer's display for a while, and then the message informing you that the initial setting has been completed (shown in Fig. 2-19) is displayed.
4) If the message shown in Fig. 2-19 appears in the computer's display, press any key. The computer's display returns to Fig. 2-17 (MAIN MENU).
5) Perform all digital adjustments, referring to "2-8-5. Digital Adjustment Procedure".

Note 2: If an error message appears in the computer's display, refer to "2-8-7. Error Messages". If a key is pressed after the error message appears, the computer's display returns to the MAIN MENU (Fig. 2-17)

MAIN MENU

```
***********************************************
**************** MAIN MENU ******************
***********************************************
        [A]    INITIALIZE EEPROM
        [B]    ELECTRIC VARIABLE RESISTOR
        [C]    ADJUSTMENT
        [D]    AUTO FOCUS
        [ESC]  END
Please select [A] or [B] or [C] or [D] or [ESC]
```

Fig. 2-17

Press A

```
         NOW INITIAL SETTING !!
         Please wait a moment
```

Fig. 2-18

```
       COMPLETED INITIAL SETTING !!
          **** HIT ANY KEY ****
```

Fig. 2-19

Press any key to return to Fig. 2-17

ERROR MESSAGE

```
           CAN'T WRITE TO EEPROM
  Check the wiring or change the EEPROM
           **** HIT ANY KEY ****
```

Fig. 2-20

2-8-4. Camera Analogue and Electric Variable Resistor Adjustment

Note 1: Only the item "(3) Sensor VCO Lock Voltage Confirmation/Adjustment"is an analogue adjustment. A personal computer is not used.

Note 2: The adjustment values obtained by the electric variable resistor adjustments do not change after the initial setting.

Note 3: Be sure to check the values before performing electric variable resistor adjustment. Execute these adjustments only if the values are out of the specifications.

1) Start the MAP, referring to "2-8-2. How to Start the Adjustment Program (MAP)"
2) Press B to select ELETRIC VARIABLE RESISTOR. (Figs. 2-21, 2-22)
3) Select the number of the required adjustment.

Note 4: If ESC (escape) is pressed, the computer's display returns to Fig. 2-21 (MAIN MENU).

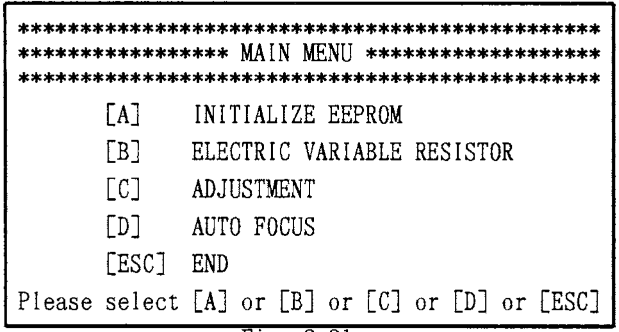
Note 5: To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

(1) Subcarrier Frequency Confirmation/Adjustment (Figs. 2-23 - 2-25)

PROPOSE	•To set the subcarrier frequency to the specified value.
INCOMPLETED PHENOMENON	•No colour appears.
TEST POINT	•TP1103 PROCESS •JK200-9 (GND : Black lead of DSP Output Jig)
EQUIPMENT/JIG	•Frequency Counter
CONDITION	―――――
PROCEDURE	

1) Press 1 to select the subcarrier frequency. (Fig. 2-23)
2) Connect the frequency counter to TP1103.
3) Press the U and D keys to set the frequency to 17.734475MHz ± 20Hz.
4) Press ENTER key.
5) Press any key.

MAIN MENU

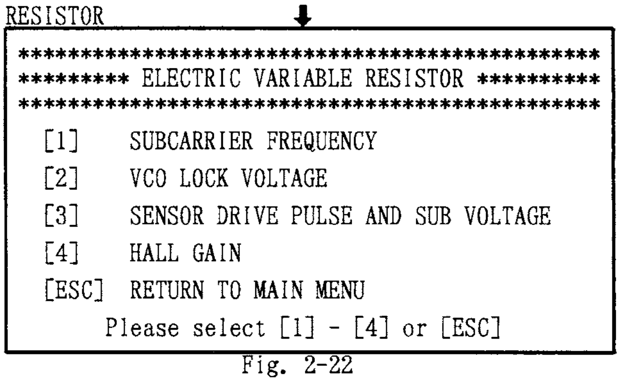


```
************************************************
***************** MAIN MENU ********************
************************************************
        [A]    INITIALIZE EEPROM
        [B]    ELECTRIC VARIABLE RESISTOR
        [C]    ADJUSTMENT
        [D]    AUTO FOCUS
        [ESC]  END
Please select [A] or [B] or [C] or [D] or [ESC]
```

Fig. 2-21

Press B

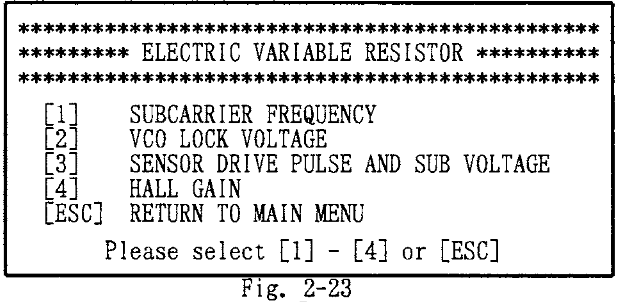
ELECTRIC VARIABLE RESISTOR



```
************************************************
********* ELECTRIC VARIABLE RESISTOR **********
************************************************
   [1]    SUBCARRIER FREQUENCY
   [2]    VCO LOCK VOLTAGE
   [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
   [4]    HALL GAIN
   [ESC]  RETURN TO MAIN MENU
        Please select [1] - [4] or [ESC]
```

Fig. 2-22

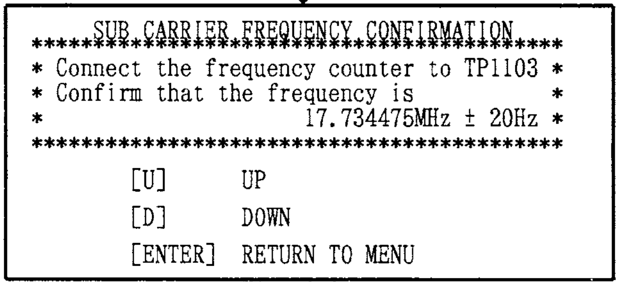
ELECTRIC VARIABLE RESISTOR



```
************************************************
********* ELECTRIC VARIABLE RESISTOR **********
************************************************
   [1]    SUBCARRIER FREQUENCY
   [2]    VCO LOCK VOLTAGE
   [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
   [4]    HALL GAIN
   [ESC]  RETURN TO MAIN MENU
        Please select [1] - [4] or [ESC]
```

Fig. 2-23

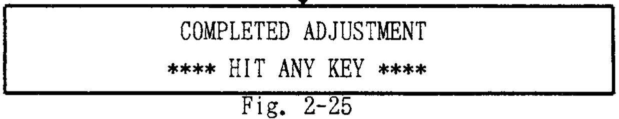
Press 1



```
 *****SUB CARRIER FREQUENCY CONFIRMATION*****
 * Connect the frequency counter to TP1103 *
 * Confirm that the frequency is           *
 *                    17.734475MHz ± 20Hz *
 *******************************************
        [U]      UP
        [D]      DOWN
        [ENTER]  RETURN TO MENU
```

Fig. 2-24

Press ENTER



```
            COMPLETED ADJUSTMENT
            **** HIT ANY KEY ****
```

Fig. 2-25

Press any key to return to Fig. 2-23.

(2) VCO Lock Voltage Confirmation/Adjustment (Figs. 2-26 - 2-28)

PROPOSE	·To synchronize the horizontal sync signal with the subcarrier frequency.
INCOMPLETED PHENOMENON	·The picture is distorted.
TEST POINT	·TP1102 PROCESS ·JK200-9 (GND : Black lead of DSP Output Jig)
EQUIPMENT/JIG	·DVM
CONDITION	———
PROCEDURE	

1) Press 2 to select the VCO lock voltage. (Fig. 2-26)
2) Connect the DVM to TP1102.
3) Press the U and D keys to set the voltage to 2.2V ± 0.1V.
4) Press ENTER key.
5) Press any key.

ELECTRIC VARIABLE RESISTOR

```
***********************************************
********* ELECTRIC VARIABLE RESISTOR **********
***********************************************

  [1]    SUBCARRIER FREQUENCY
  [2]    VCO LOCK VOLTAGE
  [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
  [4]    HALL GAIN
  [ESC]  RETURN TO MAIN MENU
       Please select [1] - [4] or [ESC]
```

Fig. 2-26

⬇

Press 2

⬇

```
                VCO LOCK VOLTAGE
*******************************************
*      Connect the DVM to TP1102.         *
* Confirm that the voltage is 2.2V ± 0.1V *
*******************************************

        [U]      UP
        [D]      DOWN
        [ENTER]  RETURN TO MENU
```

Fig. 2-27

⬇

Press ENTER

⬇

```
            COMPLETED ADJUSTMENT
            **** HIT ANY KEY ****
```

Fig. 2-28

⬇

Press any key to return to Fig. 2-26.

(3) Sensor VCO Lock Voltage Confirmation/ Adjustment

Note: Only this item is an analogue adjustment which does not use a personal computer.

TEST POINT	·TP1001 SENSOR ·JK200-9 (GND : Black lead of DSP Output Jig)
ADJUST	·CT1001 SENSOR
EQUIPMENT/JIG	·DVM
CONDITION	———
PROCEDURE	

1) Connect the DVM to TP1001.
2) Adjust CT1001 for 2.7V ± 0.1V.

A PERSONAL COMPUTER IS NOT USED FOR THIS ADJUSTMENT.

(4) Sensor Drive Pulse and Sub Voltage Confirmation/Adjustment (Figs. 2-29 - 2-32)

PROPOSE	·To synchronize the sensor drive frequency with the horizontal sync signal. ·To suppress blooming.
INCOMPLETED PHENOMENON	·The picture is distorted. ·When a very bright subject is shot, a band of light (blooming occurs at the top and bottom of the subject.
TEST POINT	·TP1002 PROCESS ·JK200-9 (GND : Black lead of DSP Output Jig)
EQUIPMENT/JIG	·DVM
CONDITION	――――――
PROCEDURE	

1) Press 3 to select the sensor drive pulse and sub voltage. (Fig. 2-29)
2) Check the number in the seal at the back of IC1001 (SENSOR) and enter the number into the personal computer.
3) Press ERNTER key.
4) The specified voltage is displayed in the XXX section of the display in Fig. 2-31.
5) Connect the DVM to TP1002.
6) Press the U and D keys adjust the voltage to the specified one displayed in step 4).
7) Press ENTER key.
8) Check that the voltage at TP1003 matches that displayed in the display.
   Note: If they do not match, IC1108 or IC1110 is faulty.
9) Press any key.

ELECTRIC VARIABLE RESISTOR

```
*************************************************
********* ELECTRIC VARIABLE RESISTOR **********
*************************************************
  [1]    SUBCARRIER FREQUENCY
  [2]    VCO LOCK VOLTAGE
  [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
  [4]    HALL GAIN
  [ESC]  RETURN TO MAIN MENU
       Please select [1] - [4] or [ESC]
```

Fig. 2-29

↓

Press 3

↓

```
   SENSOR SUB VOLTAGE AND
      DRIVE PULSE FREQUENCY CONFIRMATION
   PLEASE INPUT SENSOR'S SEAL OF
                NUMBER FROM KEYBOARD=>
```

Fig. 2-30

↓

```
      SENSOR SUB VOLTAGE ADJUSTMENT
   **************************************
   *     Connect the DVM to TP1002.     *
   * Confirm that the voltage is XXX V *
   **************************************
        [U]      UP
        [D]      DOWN
        [ENTER]  RETURN TO MENU
```

Fig. 2-31-1

↓

Press ENTER

↓

```
      RESET GATE VOLTAGE ADJUSTMENT
   ***************************************
   *     Connect the DVM to TP1003.      *
   * Confirm that the voltage is XXX V. *
   ***************************************
             **** HIT ANY KEY ****
```

Fig. 2-30-2

↓

Press any key.

↓

```
             COMPLETED ADJUSTMENT
             **** HIT ANY KEY ****
```

Fig. 2-32

↓

Press any key to return to Fig. 2-29.

(5) Hall Gain Adjustment (Figs. 2-33 - 2-35)

Note: This adjustment is performed automatically. When the Hall Gain Adjustment is specified, the personal computer adjusts it automatically

TEST POINT	――――――
EQUIPMENT/JIG	――――――
CONDITION	――――――
PROCEDURE	

1) Press 4 to select the hall gain. (Fig. 2-33)
2) After several seconds, the display will change from Fig. 2-34 to Fig. 2-35.
3) Press ENTER key.
4) Press any key.

ELECTRIC VARIABLE RESISTOR

```
*************************************************
********* ELECTRIC VARIABLE RESISTOR **********
*************************************************
  [1]    SUBCARRIER FREQUENCY
  [2]    VCO LOCK VOLTAGE
  [3]    SENSOR DRIVE PULSE AND SUB VOLTAGE
  [4]    HALL GAIN
  [ESC]  RETURN TO MAIN MENU
       Please select [1] - [4] or [ESC]
```

Fig. 2-33

↓

Press 4

↓

```
              HALL GAIN ADJUSTING
```

Fig. 2-34

↓

```
             COMPLETED ADJUSTMENT
             **** HIT ANY KEY ****
```

Fig. 2-35

↓

Press any key to return to Fig. 2-33.

2-8-5. Digital Adjustment Procedure

Note 1: When EEP ROM or the process circuit board is replaced, initialize the EEP ROM, referring to "2-8-3. Initial Setting By Model" then perform all the digital adjustments.

Note 2: When an error message appears during adjustment, refer to "2-8-7. Error Messages". If a key is pressed after an error message appears, the ADJUSTMENT MENU is restored.

1) Start the MAP, referring to "2-8-2. How to Start the Adjustment Programme (MAP)"
2) Press [C] to select ADJUSTMENT. (Figs. 2-36, 2-37)
3) Select the number of the required adjustment.

Note 3: If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-36 (MAIN MENU).

Note 4: To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/ recorder and jig.

MAIN MENU

```
************************************************
***************** MAIN MENU *******************
************************************************

        [A]    INITIALIZE EEPROM
        [B]    ELECTRIC VARIABLE RESISTOR
        [C]    ADJUSTMENT
        [D]    AUTO FOCUS
        [ESC]  END

Please select [A] or [B] or [C] or [D] or [ESC]
```

Fig. 2-36

↓

Press [C]

↓

ADJUSTMENT MENU

```
************************************************
***************** ADJUSTMENT ******************
************************************************

          [1]      AUTO IRIS CONTROL
          [2]      IRIS CALIBRATION
          [3]      BLUE MATRIX
          [4]      WHITE BALANCE
          [5]      CHROMA GAIN
          [ESC]    RETURN TO MAIN MENU

       Please select [1] - [5] or [ESC]
```

Fig. 2-37

(1) Auto Iris Control Adjustment (Figs. 2-38 - 2-41)

Note 1: After this adjustment is completed, be sure to perform the iris calibration adjustment described in the next item.

Note 2: This adjustment is performed automatically. When the auto iris control adjustment is specified, the personal computer adjusts it automatically.

PROPOSE	·To set the brightness of picture.
INCOMPLETED PHENOMENON	·A black subject with low illumination is raised. ·A black subject with low illumination is depressed.
EQUIPMENT/JIG	(Oscilloscope)
CONDITION	Point at a light box without a chart inserted.
PROCEDURE	

1) Press [1] to select the auto iris control adjustment. (Fig. 2-39)
2) If there is no abnormality in the camera/ recorder, the message shown in Fig. 2-40 is displayed in the computer's display for a while, and then message shown in Fig. 2-41 appears.
3) After the computer's display changes from Fig. 2-41 to Fig. 2-42, press any key to return the display to Fig. 2-39. Now, the auto iris control adjustment is complete.

Note 3: After the adjustment is complete, flickering may occur, but this does indicate a malfunction. It stops when the iris calibration adjustment is complete.

ADJUSTMENT MENU

```
************************************************
***************** ADJUSTMENT ******************
************************************************

          [1]      AUTO IRIS CONTROL
          [2]      IRIS CALIBRATION
          [3]      BLUE MATRIX
          [4]      WHITE BALANCE
          [5]      CHROMA GAIN
          [ESC]    RETURN TO MAIN MENU

       Please select [1] - [5] or [ESC]
```

Fig. 2-38

↓

Press [1]

↓

```
            AUTO IRIS CONTROL ADJUSTING

               Please wait a moment
```

Fig. 2-39

↓

```
         VIDEO LEVEL DATA WRITING TO EEPROM
```

Fig. 2-40

↓

```
              COMPLETED WRITING EEPROM

               **** HIT ANY KEY ****
```

Fig. 2-41

↓

Press any key to return to ADJUSTMENT MENU (Fig. 2-38)

(2) Iris Calibration Adjustment (Figs. 2-42 - 2-46)

Note: This adjustment is performed automatically. When the Iris Calibration Adjustment is specified, the personal computer adjusts it automatically

PROPOSE	To detect the F number correctly.
INCOMPLETED PHENOMENON	·The iris operation becomes unstable. ·AGC, programme AE and auto white balance does not operate normally.
EQUIPMENT/JIG	———
CONDITION	·Attach a C12 filter. ·Point the camera at the light box without a chart to fill the screen (at wide-angle).
PROCEDURE	

1) Press [2] to select the iris calibration adjustment. (Fig. 2-43)
2) If there is no abnormality in the camera/recorder, the message shown in Figs. 2-44 and 2-45 are displayed in the computer's display for a while, and then the message shown in Fig. 2-46 appears.
3) Now, the iris calibration adjustment is complete. Press any key to return the computer's display to Fig. 2-43.

Check: Attach a C12 filter to the lens. Connect an oscilloscope to the video output (AV OUT) and check that the waveform level is 514mV ± 70mV. (Fig. 2-42)

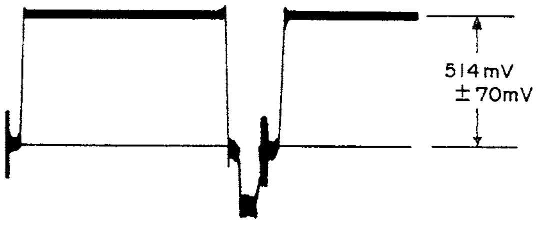


Fig. 2-42

ADJUSTMENT MENU

```
************************************************
***************** ADJUSTMENT *****************
************************************************
          [1]      AUTO IRIS CONTROL
          [2]      IRIS CALIBRATION
          [3]      BLUE MATRIX
          [4]      WHITE BALANCE
          [5]      CHROMA GAIN
          [ESC]    RETURN TO MAIN MENU
      Please select [1] - [5] or [ESC]
```

Fig. 2-43

↓

Press [2]

↓

```
IRIS CALIBRATION ADJUSTING
  Please wait a moment
```

Fig. 2-44

↓

```
HALL DATA WRITING TO EEPROM
```

Fig. 2-45

↓

```
COMPLETED WRITING EEPROM
  **** HIT ANY KEY ****
```

Fig. 2-46

↓

Press any key to return to ADJUSTMENT MENU. (Fig. 2-43)

(3) Blue Matrix Adjustment (Figs. 2-47 - 2-52)

PROPOSE	To compensate for uneveness in the chroma signal.
INCOMPLETED PHENOMENON	Colour reproduction becomes defective.
EQUIPMENT/JIG	Oscilloscope
CONDITION	Point at a colour bar chart.
PROCEDURE	

1) Press 3 to select the blue matrix adjustment. (Fig. 2-48)
2) Connect an oscilloscope to the video output (AV OUT).
3) Press the D key to minimize the yellow amplitude, and then press the U key to adjust the yellow amplitude so its relation to the blue amplitude is 1:3.
4) Press the ENTER key to write data to EEP ROM and then press any key to return the computer's display to Fig. 2-48.

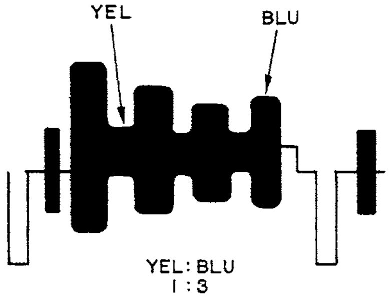


Fig. 2-47

ADJUSTMENT MENU

```
*************************************************
***************** ADJUSTMENT ********************
*************************************************
          [1]      AUTO IRIS CONTROL
          [2]      IRIS CALIBRATION
          [3]      BLUE MATRIX
          [4]      WHITE BALANCE
          [5]      CHROMA GAIN
          [ESC]    RETURN TO MAIN MENU
   Please select [1] - [5] or [ESC]
```

Fig. 2-48

↓

Press 3

↓

```
     BLUE MATRIX ADJUST MODE SETTING
          Please wait a moment
```

Fig. 2-49

↓

```
        BLUE MATRIX ADJUSTMENT
       [U]       UP
       [D]       DOWN
       [ENTER]   RETURN TO MENU
```

Fig. 2-50

↓

Press ENTER

↓

```
   BLUE MATRIX DATA WRITING TO EEPROM
```

Fig. 2-51

↓

```
       COMPLETED WRITING EEPROM
         **** HIT ANY KEY ****
```

Fig. 2-52

↓

Press any key to return to ADJUSTMENT MENU (Fig. 2-48)

(4) White Balance Adjustment (Figs. 2-53 - 2-59)

PROPOSE	To set white balance under the colour temperature which becomes a reference for the auto white balance circuit.
INCOMPLETED PHENOMENON	•Colour of the subject is different from that of the picture. •A white subject is not seen as white.
EQUIPMENT/JIG	•Oscilloscope (Vectorscope)
CONDITION	•Attach a C12 filter. •Point at a grey scale chart.
PROCEDURE	

1) Press [4] to select the white balance adjustment. (Fig. 2-55)

When using an oscilloscope (Fig. 2-53)

2) Connect an oscilloscope to the video output (AV OUT).
3) Press the [U], [D], [L] and [R] keys to minimize carrier components in the waveform. (Figs. 2-53, 2-57)
4) After minimizing the carrier components, press the [U] key 10 times.
5) Press the [ENTER] key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-55.

When using a vectorscope (Fig. 2-54)

2) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
3) Press the [U], [D], [L] and [R] keys so the bright spot comes to the centre of the vectorscope. (Figs. 2-54, 2-57)
4) After centring the bright spot, press the [U] key 10 times.
5) Press the [ENTER] key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-55.

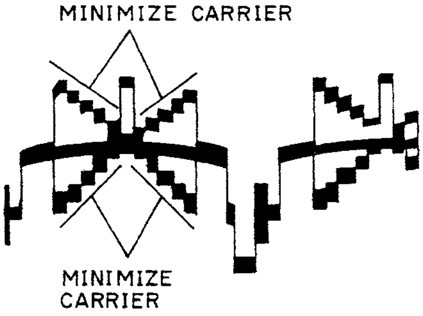


Fig. 2-53

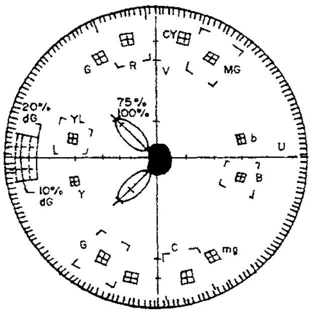


Fig. 2-54

ADJUSTMENT MENU

```
*************************************************
***************** ADJUSTMENT ******************
*************************************************
        [1]      AUTO IRIS CONTROL
        [2]      IRIS CALIBRATION
        [3]      BLUE MATRIX
        [4]      WHITE BALANCE
        [5]      CHROMA GAIN
        [ESC]    RETURN TO MAIN MENU
   Please select [1] - [5] or [ESC]
```

Fig. 2-55

↓

Press [4]

↓

```
   WHITE BALANCE ADJUST MODE SETTING
        Please wait a moment
```

Fig. 2-56

↓

```
      WHITE BALANCE ADJUSTMENT
      [U]        RED-GAIN UP
      [D]        RED-GAIN DOWN
      [R]        BLUE-GAIN UP
      [L]        BLUE-GAIN DOWN
      [ENTER]    RETURN TO MENU
```

Fig. 2-57

↓

Press [ENTER]

↓

```
  WHITE BALANCE DATA WRITING TO EEPROM
```

Fig. 2-58

↓

```
      COMPLETED WRITING EEPROM
         **** HIT ANY KEY ****
```

Fig. 2-59

↓

Press any key to return to ADJUSTMENT MENU (Fig. 2-55)

(5) Chroma Gain Adjustment (Figs. 2-60 - 2-66)

PROPOSE	To set the colour saturation under the reference colour temperature.
INCOMPLETED PHENOMENON	·Colour of the picture is denser than that of the subject. ·Colour of the picture is lighter than that of the subject
EQUIPMENT/JIG	·Oscilloscope (Vectorscope)
CONDITION	·Attach a C12 filter. ·Point at a colour bar chart.
PROCEDURE	

1) Press $\boxed{5}$ to select the chroma gain adjustment. (Fig. 2-62)

When using an oscilloscope (Fig. 2-60)

2) Connect an oscilloscope to the video output (AV OUT).
3) Press the $\boxed{U}$ and $\boxed{D}$ keys to set the red level to 470mV ± 30mV. (Figs. 2-60, 2-64)
4) Press the $\boxed{\text{ENTER}}$ key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-62.

When using a vectorscope (Fig. 2-61)

2) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
3) Press the $\boxed{U}$ and $\boxed{D}$ keys so the red vector is 155% ± 10% of the burst level. (Figs. 2-61, 2-64)
4) Press the $\boxed{\text{ENTER}}$ key to write data to the EEP ROM and then press any key to return the computer's display to Fig. 2-62.

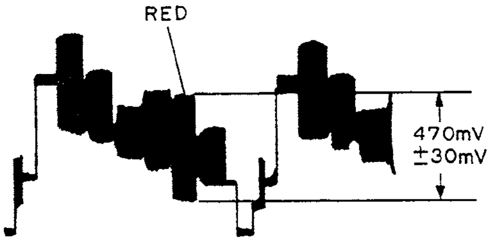


Fig. 2-60

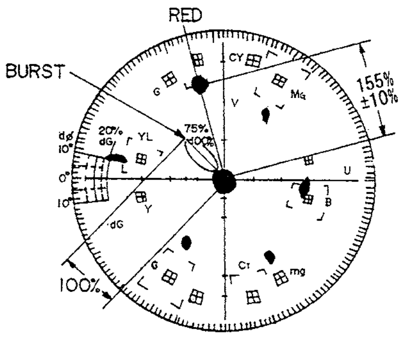


Fig. 2-61

ADJUSTMENT MENU

```
*********************************************
**************** ADJUSTMENT *****************
*********************************************
          [1]     AUTO IRIS CONTROL
          [2]     IRIS CALIBRATION
          [3]     BLUE MATRIX
          [4]     WHITE BALANCE
          [5]     CHROMA GAIN
          [ESC]   RETURN TO MAIN MENU
      Please select [1] - [5] or [ESC]
```

Fig. 2-62

↓

Press $\boxed{5}$

↓

```
      CHROMA GAIN ADJUST MODE SETTING
          Please wait a moment
```

Fig. 2-63

↓

```
        CHROMA GAIN ADJUSTMENT
     [U]       UP
     [D]       DOWN
     [ENTER]   RETURN TO MENU
```

Fig. 2-64

↓

Press $\boxed{\text{ENTER}}$

↓

```
     CHROMA GAIN DATA WRITING TO EEPROM
```

Fig. 2-65

↓

```
        COMPLETED WRITING EEPROM
          **** HIT ANY KEY ****
```

Fig. 2-66

↓

Press any key to return to ADJUSTMENT MENU (Fig. 2-62)

2-8-6. Autofocus Adjustment Procedure

Note 1: Autofocus adjustment also needs a personal computer. Connect the camera/recorder, jigs, power supply, etc. in the same way as in Digital Adjustment.

Note 2: Be sure to perform this adjustment after replacing or initializing the lens block, autofocus circuit board and process circuit board (EEPROM).

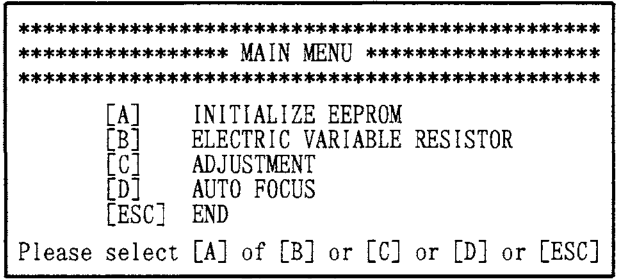
Note 3: When an error message appears during adjustment, refer to "(8) Error Messages during Autofocus Adjustment".

1) Start MAP, referring to "2-8-2. How to Start the Adjustment Programme (MAP)".
2) Press D to select AUTO FOCUS. (Figs. 2-67, and 2-68.)
3) Select the number of the required adjustment.

Note 4: If ESC (escape) is pressed, the computer's display returns to Fig. 2-67 (MAIN MENU).

Note 5: To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU



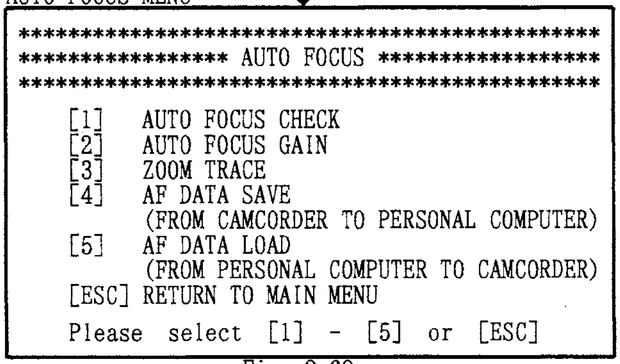
```
************************************************
**************** MAIN MENU *****************
************************************************

        [A]   INITIALIZE EEPROM
        [B]   ELECTRIC VARIABLE RESISTOR
        [C]   ADJUSTMENT
        [D]   AUTO FOCUS
        [ESC] END
Please select [A] of [B] or [C] or [D] or [ESC]
```

Fig. 2-67

Press D

AUTO FOCUS MENU



```
************************************************
**************** AUTO FOCUS ****************
************************************************
    [1]   AUTO FOCUS CHECK
    [2]   AUTO FOCUS GAIN
    [3]   ZOOM TRACE
    [4]   AF DATA SAVE
          (FROM CAMCORDER TO PERSONAL COMPUTER)
    [5]   AF DATA LOAD
          (FROM PERSONAL COMPUTER TO CAMCORDER)
    [ESC] RETURN TO MAIN MENU
    Please  select  [1]  -  [5]  or  [ESC]
```

Fig. 2-68

CAUTION 1:
Perform the following adjustments after replacing the autofocus circuit board.

- Autofocus Gain Adjustment
- Zoom Trace Adjustment
- Hall Gain Adjustment
- Auto Iris Confirmation/Adjustment
- Iris Calibration Confirmation/Adjustment

CAUTION 2:
After replacing the autofocus circuit board, be sure to perform the following initialization before proceeding to each adjustment.
If initialization is not performed, a communications error occurs and no adjustment can be done.

① Check the connection of the new circuit board.
② Supply power to the camera/recorder.
③ Short the test land shown in Fig. 2-69 to GND momentarily.
④ Turn off the power to the camera/recorder approx. 2 seconds after short-circuiting.
Now initialization is complete.
Supply power to the camera/recorder again.

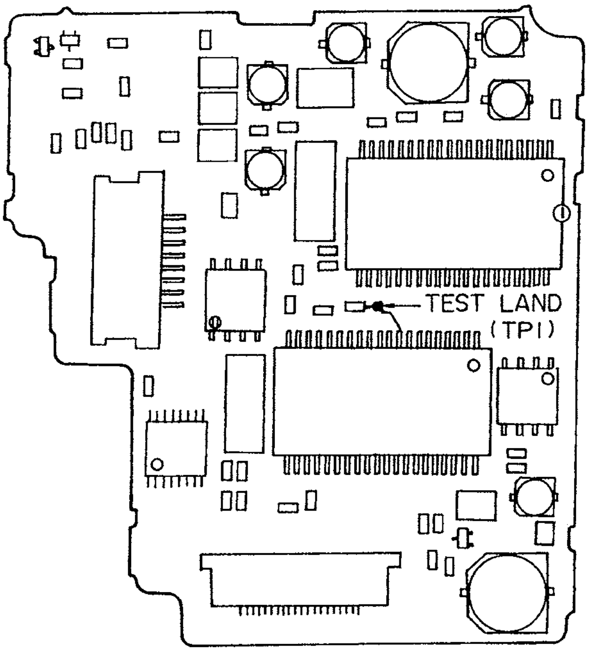


Fig. 2-69

(1) Auto Focus Check (Figs. 2-70 - 2-73)

Note: Perform this check item before the autofocus gain and zoom trace adjustments. This item detects the AF defective state. The camera/recorder may return to the normal state through the data recovery function.

PROPOSE	·To check the communications function. ·To check and recover the fixed data for each model. ·To check and recover the adjustment values.
INCOMPLETED PHENOMENON	·An error message appears on the personal computer's display.
EQUIPMENT/JIG	————
CONDITION	————
PROCEDURE	

Note 1: If the motor in the lens block generates abnormal sound after the power is turned on, select the AF checker after the sound stops.

1) Press [1] to select the AF check. (Fig. 2-70)

Note 2: When the AF check is selected, the following checks and recoveries are performed automatically in sequence.

Note 3: After the autofocus circuit board is replaced, the checks after step 3) and later are not necessary.

2) Checking the communications function:
   Checks the communications state of the autofocus µP.
   If there is an abnormality, AF ERR 1 or 2 appears on the computer's display.
   If it is normal, the programme shifts to step 3) automatically.
3) Checking the fixed data for each model and recovery:
   Checks the fixed data for each model.
   If there is an abnormality, AF ERR 3 appears on the computer's display.
   If a key is pressed after AF ERR 3 is displayed, the fixed data is recovered automatically.
4) Checking the adjustment values and recovery:
   Checks the adjustment values. If there is an abnormality, AF ERR 4 appears on the computer's display. If a key is pressed after AF ERR 4 is displayed, the adjustment value is recovered automatically.
5) The AF checker function is ended automatically. If everything is normal, an OK message appears on the computer's display. (Fig. 2-71) If the data in steps 3) and/or 4) are recovered, the recovery complete message appears on the computer's display. (Fig. 2-73)
6) Press any key to return to the AUTO FOCUS MENU.

Note 4: If the OK message is displayed with a defective product, it is assumed that the lens block (components other than the autofocus circuit board) is defective.

Note 5: After the data in steps 3) and/or 4) are recovered, check the following items.
(6) Zoom Trace Confirmation
(7) Autofocus Gain Confirmation

AUTO FOCUS MENU

```
***********************************************
**************** AUTO FOCUS *****************
***********************************************

     [1]   AUTO FOCUS CHECK
     [2]   AUTO FOCUS GAIN
     [3]   ZOOM TRACE
     [4]   AF DATA SAVE
           (FROM CAMCORDER TO PERSONAL COMPUTER)
     [5]   AF DATA LOAD
           (FROM PERSONAL COMPUTER TO CAMCORDER)
     [ESC] RETURN TO MAIN MENU

     Please  select  [1]  -  [5]  or  [ESC]
```

Fig. 2-70

↓

Press [1]

↓

OK MESSAGE

```
 [AF DATA CHECKER]
*(1) COMUNICATION CHECK*
*(2) STATIONARY DATA CHECK & REPAIR*
     [DATA COMPARE]
*(3) ADJUSTED DATA CHECK & REPAIR*
     [DATA COMPARE]

 STATIONARY DATA CORRECT. UNNECESSARY REPAIR.
 ADJUSTED DATA CORRECT. UNNECESSARY REPAIR.
 **** HIT ANY KEY ****  AF DATA CHECKER CLOSE.
```

Fig. 2-71

↓

Press any key to return to AUTO FOCUS MENU.

EXAMPLE : ERROR MESSAGE (ERROR OF ADJUSTED DATA)

```
 [AF DATA CHECKER]
*(1) COMUNICATION CHECK*
*(2) STATIONARY DATA CHECK & REPAIR*
     [DATA COMPARE]
*(3) ADJUSTED DATA CHECK & REPAIR*
     [DATA COMPARE]

 DATA ERROR OF ADJUSTED DATA.
 PLEASE FOLLOW INDICATION OF
                    <AF ERR 4> IN THE MANUAL.
 **** HIT ANY KEY ****  REPAIR START.
```

Fig. 2-72

↓

Press any key

↓

REPAIR COMPLETED MESSAGE

```
 [AF DATA CHECKER]
*(1) COMUNICATION CHECK*
*(2) STATIONARY DATA CHECK & REPAIR*
     [DATA COMPARE]
*(3) ADJUSTED DATA CHECK & REPAIR*
     [DATA COMPARE]

 STATIONARY DATA CORRECT. UNNECESSARY REPAIR.
 ADJUSTED DATA REPAIR COMPLETED.
 **** HIT ANY KEY ****  AF DATA CHECKER CLOSE.
```

Fig. 2-73

↓

Press any key to return to AUTO FOCUS MENU.

(2) Auto Focus Gain Adjustment (Figs. 2-74 - 2-83)

PROPOSE	·To set the two autofocus gains (high/low).
INCOMPLETED PHENOMENON	·It takes time until a subject is brought into focus or a subject is not focused in the autofocus mode.
EQUIPMENT/JIG	·Colour Video Monitor ·AF Inspection Chart
CONDITION	·Point at the AF inspection chart 2-3 m away. ·Light the chart with approx. 400 lux. ·Set the focus to MANUAL. ·Set the zoom to the telephoto end.

PROCEDURE

Note 1: Set the zoom to the telephoto end. Specifying this item disables the electronic zoom and enables only the optical zoom (X8).

Note 2: Place the chart as parallel as possible to the lens surface.

1) Focus on the chart manually.
2) Press $\boxed{2}$ to select the AF gain adjustment. (Fig. 2-76)
3) The adjustment instruction menu is displayed. (Fig. 2-78)
4) Press any key.
5) The high gain adjustment message appears on the computer's display. (Fig. 2-79)
6) Set to the high gain angle of view. (Fig. 2-74)
7) Press any key.
8) After the high gain adjustment has been done automatically, the low gain message appears on the computer's display.
9) Set to the low gain angle of view. (Fig. 2-75)
10) Press any key.
11) The low gain adjustment is done automatically.
12) The AF gain adjustment complete message appears on the computer's display. (Fig. 2-83)
13) Press any key to return to the AUTO FOCUS MENU.

HIGH GAIN angle of view: Set the border between white and grey to the centre of the screen.

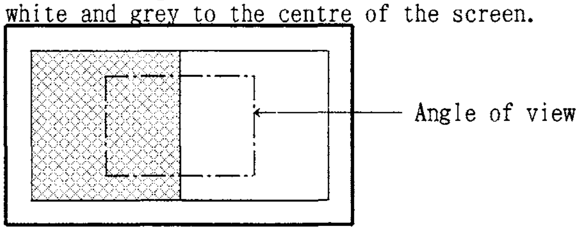


Fig. 2-74

LOW GAIN angle of view: Set the black frame of white to the centre of the screen.

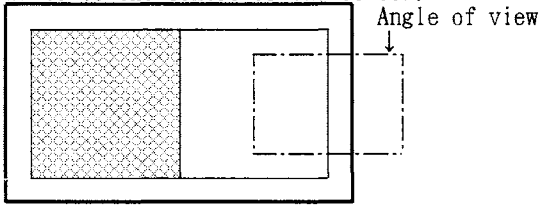


Fig. 2-75

AUTO FOCUS MENU

```
**********************************************
**************** AUTO FOCUS *****************
**********************************************

  [1]   AUTO FOCUS CHECK
  [2]   AUTO FOCUS GAIN
  [3]   ZOOM TRACE
  [4]   AF DATA SAVE
        (FROM CAMCORDER TO PERSONAL COMPUTER)
  [5]   AF DATA LOAD
        (FROM PERSONAL COMPUTER TO CAMCORDER)
  [ESC] RETURN TO MAIN MENU
  Please  select  [1]  -  [5]  or  [ESC]
```

Fig. 2-76

↓

Press $\boxed{2}$

↓

```
PROVIDING AF_GAIN ADJUSTMENT.
```

Fig. 2-77

↓

```
PLEASE TURN ON THE AUTO-FOCUS SW
        TO MANUAL FOCUS AND TAKE THE FOCUS.
PLEASE ADJUST BRIGHTNESS OF THE LIGHT
                             FOR THE CHART.
          **** HIT ANY KEY ****
```

Fig. 2-78

↓

Press any key

↓

HIGH GAIN ADJUST MASSAGE

```
PROVIDING AF_GAIN ADJUSTMENT.
HIGH GAIN ADJUSTMENT.
PLEASE SET THE PICTURE ANGLE
                 FOR HIGH GAIN POSITION.
        **** HIT ANY KEY ****
```

Fig. 2-79

↓

Press any key

↓

```
AF_GAIN ADJUSTMENT
```

Fig. 2-80

↓

LOW GAIN ADJUST MASSAGE

```
PROVIDING AF_GAIN ADJUSTMENT.
LOW GAIN ADJUSTMENT.
PLEASE SET THE PICTURE ANGLE
                 FOR LOW GAIN POSITION.
        **** HIT ANY KEY ****
```

Fig. 2-81

↓

Press any key

↓

```
AF_GAIN ADJUSTMENT
```

Fig. 2-82

↓

```
AF GAIN ADJUSTMENT COMPLETED.
     **** HIT ANY KEY ****
```

Fig. 2-83

↓

Press any key to return to AUTO FOCUS MENU.

(3) Zoom Trace Adjustment (Figs. 2-84 - 2-87)

Be sure to perform this adjustment after the autofocus gain adjustment is completed.

PROPOSE	•To perform out-of-focus correction during zooming.
INCOMPLETED PHENOMENON	•Focus is lost during zooming.
EQUIPMENT/JIG	•Colour Video Monitor •Backfocus Chart
CONDITION	•Point at the backfocus chart, 1500±5 mm away from section (A) on the left case. (Fig. 2-84) •Light the chart with 200-400 lux. •Set the focus to AUTO.
PROCEDURE	

Note 1: Measure the distance between the chart and lens surface precisely.

Note 2: Place the chart as parallel as possible to the lens surface.

1) Set the end of the wedge on the backfocus chart to the centre of the monitor screen.
2) Press $\boxed{3}$ to select the zoom trace adjustment. (Fig. 2-85)
3) The zoom trace adjustment is done automatically.

Note 3: Do not place any obstruction between the lens and chart during adjustment.

4) The zoom trace adjustment is completed approx. 7-10 minutes after it has been selected.
5) The zoom trace adjustment complete message is displayed. (Fig. 2-87)

AUTO FOCUS MENU

```
***********************************************
**************** AUTO FOCUS *****************
***********************************************

     [1]   AUTO FOCUS CHECK
     [2]   AUTO FOCUS GAIN
     [3]   ZOOM TRACE
     [4]   AF DATA SAVE
           (FROM CAMCORDER TO PERSONAL COMPUTER)
     [5]   AF DATA LOAD
           (FROM PERSONAL COMPUTER TO CAMCORDER)
     [ESC] RETURN TO MAIN MENU
     Please  select  [1]  -  [5]  or  [ESC]
```

Fig. 2-85

⬇

Press $\boxed{3}$

⬇

```
         ZOOM TRACE ADJUSTMENT.
         PLEASE WAIT DOZENS OF MINUTES.
         STEP ×
```

Fig. 2-86

ZOOM TRACE ADJ. ⬇
COMPLETE MESSAGE

```
        ZOOM TRACE ADJUSTMENT COMPLETED.
             **** HIT ANY KEY ****
```

Fig. 2-87

⬇

Press any key to return to AUTO FOCUS MENU.

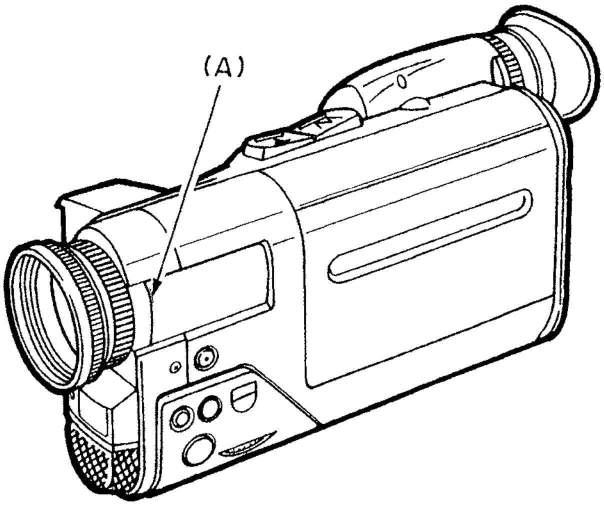


Fig. 2-84

(4) Auto Focus Data Save (Figs. 2-88 - 2-91)

This function stores data related to the product's autofocus in the personal computer temporarily. When the autofocus circuit board is replaced, this function allows the storage of the data for the old circuit board temporarily, write it to the new circuit board (see the next item) and check whether or not the defective phenomenon is reproduced with the new circuit board.

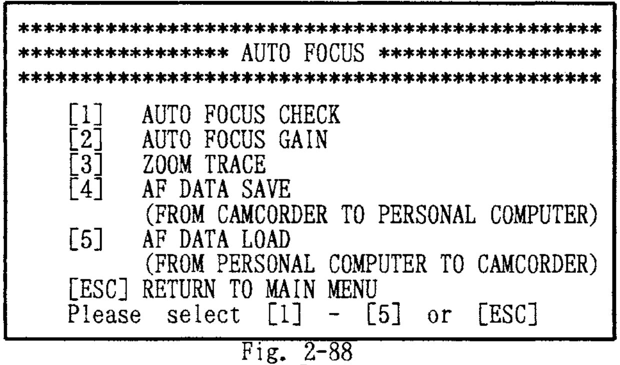
Note: The AF data saver is used for checking. Be sure to perform the specified adjustments after the autofocus circuit board is replaced.

PROPOSE	·To store autofocus related data in the personal computer temporarily.
INCOMPLETED PHENOMENON	————
EQUIPMENT/JIG	————
CONDITION	————
PROCEDURE	

Note: Disable the write protect function of the floppy disk.

1) Press [4] to select the AF data save. (Fig. 2-88)
2) A read-out confirmation message appears on the computer's display. (Fig. 2-89)
3) Press [Y].
4) The read-out complete message is displayed.
5) Press any key to return to the AUTO FOCUS MENU.

AUTO FOCUS MENU

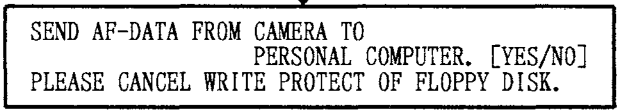


```
**********************************************
**************** AUTO FOCUS *****************
**********************************************

     [1]   AUTO FOCUS CHECK
     [2]   AUTO FOCUS GAIN
     [3]   ZOOM TRACE
     [4]   AF DATA SAVE
           (FROM CAMCORDER TO PERSONAL COMPUTER)
     [5]   AF DATA LOAD
           (FROM PERSONAL COMPUTER TO CAMCORDER)
     [ESC] RETURN TO MAIN MENU
     Please  select  [1]  -  [5]  or  [ESC]
```

Fig. 2-88

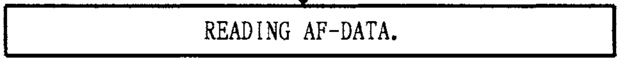
⬇ Press [4] ⬇



```
 SEND AF-DATA FROM CAMERA TO
                   PERSONAL COMPUTER. [YES/NO]
 PLEASE CANCEL WRITE PROTECT OF FLOPPY DISK.
```

Fig. 2-89

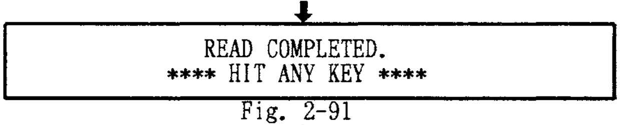
⬇ Press [Y] ⬇



```
               READING AF-DATA.
```

Fig. 2-90

⬇



```
               READ COMPLETED.
            **** HIT ANY KEY ****
```

Fig. 2-91

⬇

Press any key to return to AUTO FOCUS MENU.

(5) Auto Focus Data Load (Figs. 2-92 - 2-95)

This function writes data related to autofocus stored temporarily in the personal computer in the previous item, to the product. When the autofocus circuit board is replaced, this function allows to store the data from the old circuit board temporarily (see the previous item), write it to the new circuit board and check whether or not the defective phenomenon is reproduced with the new circuit board.

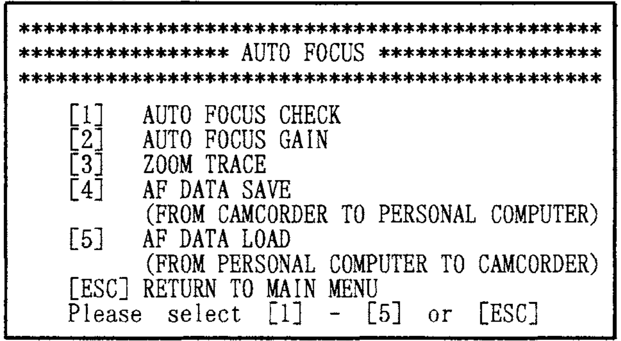
Note 1: The AF data loader is used for checking. Be sure to perform the specified adjustments after the autofocus circuit board is replaced.

Note 2: Data related to autofocus is not recorded on the adjustment floppy disk when it is shipped from the factory.

PROPOSE	·To write data related to autofocus stored in the personal computer temporarily to the product.
INCOMPLETED PHENOMENON	————
EQUIPMENT/JIG	————
CONDITION	————
PROCEDURE	

1) Press [5] to select the AF data load. (Fig. 2-92)
2) A writing confirmation message appears on the computer's display. (Fig. 2-93)
3) Press [Y].
4) The writing complete message is displayed.
5) Press any key to return to the AUTO FOCUS MENU.

AUTO FOCUS MENU

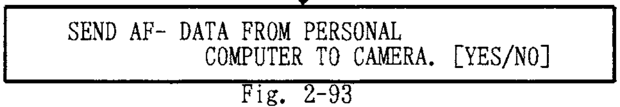


```
**********************************************
**************** AUTO FOCUS *****************
**********************************************

     [1]   AUTO FOCUS CHECK
     [2]   AUTO FOCUS GAIN
     [3]   ZOOM TRACE
     [4]   AF DATA SAVE
           (FROM CAMCORDER TO PERSONAL COMPUTER)
     [5]   AF DATA LOAD
           (FROM PERSONAL COMPUTER TO CAMCORDER)
     [ESC] RETURN TO MAIN MENU
     Please  select  [1]  -  [5]  or  [ESC]
```

Fig. 2-92

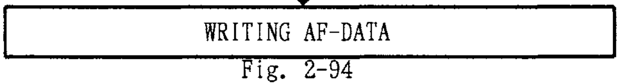
⬇ Press [5] ⬇



```
     SEND AF- DATA FROM PERSONAL
               COMPUTER TO CAMERA. [YES/NO]
```

Fig. 2-93

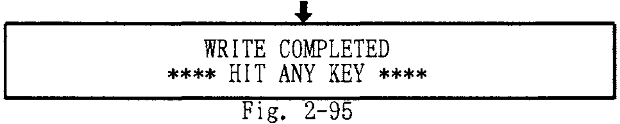
⬇ Press [Y] ⬇



```
               WRITING AF-DATA
```

Fig. 2-94

⬇



```
               WRITE COMPLETED
            **** HIT ANY KEY ****
```

Fig. 2-95

⬇

Press any key to return to AUTO FOCUS MENU.

(6) Zoom Trace Confirmation

The personal computer is not used for this adjustment.

PROPOSE	·To check whether or not the zoom trace adjustment is correct.
INCOMPLETED PHENOMENON	·Focus is lost during zooming.
EQUIPMENT/JIG	·Colour Video Monitor
CONDITION	·Point at an object more than 2 m away. ·Set the focus to MANUAL.
PROCEDURE	

1) Optimize the focus at the telephoto end.
2) Zoom in to wide-angle and check that the subject does not become greatly out of focus during zooming and at the wide-angle end.
3) If the focus is out too much, perform the zoom trace adjustment.

(7) Auto Focus Gain Confirmation (Fig. 2-96)

The personal computer is not used for this adjustment.

PROPOSE	·To check whether or not the AF gain adjustment is correct.
INCOMPLETED PHENOMENON	·It takes time until a subject is brought into focus or a subject is not focused in the autofocus mode.
EQUIPMENT/JIG	·Colour Video Monitor ·AF Inspection Chart
CONDITION	·Point at the AF inspection chart 1.5-2 m away. ·Light the chart with approx. 400 lux. ·Set the focus to MANUAL.
PROCEDURE	

1) Set the zoom to the optical telephoto end (just before X8 is displayed).
2) Set to the low gain angle of view. (Fig. 2-96)
3) Turn the focus control all the way in the telephoto direction.
4) Switch the focus to AUTO.
5) Check that the subject is brought into focus immediately. If hunting (delay until a subject is brought into focus) is conspicuous or the subject is not brought into focus, perform the autofocus gain adjustment.

LOW GAIN angle of view: Set the black frame of white to the centre of the screen.

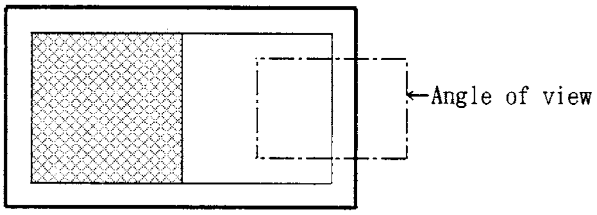


Fig. 2-96

(8) Error Messages during Autofocus Adjustment

The table below shows the error messages that are displayed during autofocus adjustment.

AF ERR	Cause (details of defect)	Countermeasure
1	Communications function is defective.	1) After initializing (supply power to the product, and short the test land (TP1) shown in Fig. 2-69 to GND, then after 2 seconds, shut off the power supply), supply power to the product again. 2) If the same error message is displayed even after the countermeasure in step 1), replace the autofocus circuit board. 3) If the same error message is still displayed after the countermeasure in step 2), the process or main circuit board is defective.
2	Communications function is defective	1) After replacing the autofocus circuit board, perform initialization (supply power to the product, and short the test land (TP1) shown in Fig. 2-69 to GND, then after 2 seconds, shut off the power supply), then supply power to the product again.
3	Fixed data for each model is defective	1) The autofocus data set for each model is defective. Press any key. The data is recovered automatically. (It is recovered in most cases.)
4	Adjustment data is defective	1) The data which compensates for the unevenness of lens blocks and circuit boards is defective. Press any key. The data is recovered automatically. (It is recovered in most cases.)
5	Autofocus gain adjustment (high gain) not possible	1) The autofocus gain adjustment (high gain) does not converge. 2) Check the adjustment conditions (distance to the chart, brightness, etc.). 3) If the same error message is displayed even after the countermeasure in step 2), replace the autofocus circuit board.
6	Autofocus gain adjustment (low gain) not possible	1) The autofocus gain adjustment (low gain) does not converge. 2) Check the adjustment conditions (distance to the chart, brightness, etc.). 3) If the same error message is displayed even after the countermeasure in step 2), replace the autofocus circuit board.
10	Zoom trace adjustment not possible	1) The zoom trace adjustment is not stable. 2) If the autofocus gain adjustment is not completed, perform it. 3) Increase the illumination of the chart. 4) Point at a different section of the chart.
11	Zoom encoder value is defective	1) The zoom encoder value is defective. 2) Check the flat cable of the lens block (connection, damage, etc.). 3) Replace the autofocus circuit board.
12	Electronic variable resistor is defective	1) The electronic variable resistor is defective. 2) Replace the autofocus circuit board.

AF ERR	Cause (details of defect)	Countermeasure
13	Zoom encoder value is defective	1) The zoom encoder value is defective. 2) Check the flat cable of the lens block (connection, damage, etc.). 3) Replace the autofocus circuit board.
14	Electronic variable resistor is defective	1) The electronic variable resistor is defective. 2) Replace the autofocus circuit board.
15	Zoom encoder value is defective	1) The zoom encoder value is defective. 2) Check the flat cable of the lens block (connection, damage, etc.). 3) Replace the autofocus circuit board.
16	Electronic variable resistor is defective	1) The electronic variable resistor is defective. 2) Replace the autofocus circuit board.
17	Zoom encoder value is defective	1) The zoom encoder value is defective. 2) Check the flat cable of the lens block (connection, damage, etc.). 3) Replace the autofocus circuit board.
18	Electronic variable resistor is defective	1) The electronic variable resistor is defective. 2) Replace the autofocus circuit board.
19	Zoom encoder value is defective	1) The zoom encoder value is defective. 2) Check the flat cable of the lens block (connection, damage, etc.). 3) Replace the autofocus circuit board.
20	Zoom encoder value is defective	1) The zoom encoder value is defective. 2) Check the flat cable of the lens block (connection, damage, etc.). 3) Replace the autofocus circuit board.

2-8-7. Error Messages

When an error message is displayed during adjustment, press any key to return the computer's display to the initial setting or adjustment menu and then investigate the cause of the error.

(1) Error Message No. 1

```
                 ERROR !!
           CAN'T WRITE TO EEPROM
 Check the wiring or change the EEPROM
          **** HIT ANY KEY ****
```

Fig. 2-101

(1) Error message displayed when EEP ROM is initialized and during whole adjustment.

Major Causes

1. EEP ROM is faulty.
2. DSP µP is faulty.
3. Data line between DSP µP and EEP ROM is faulty.
4. DSP jig is faulty.

(2) Error Message No. 2

```
                 ERROR !!

           BAD LIGHT CONDITION !

          **** HIT ANY KEY ****
```

Fig. 2-102

(2) Error massage displayed during auto iris control and iris calibration adjustments.

Countermeasures

1. Check that the brightness (also the colour temperature) of the light box dose not decrease.
2. Adjust the number of colour temperature conversion filters.

(3) Error Message No. 3

```
                 ERROR !!

       IRIS HALL DEVICE BE DEFECTIVE

          **** HIT ANY KEY ****
```

Fig. 2-103

(3) Error message displayed during auto iris control and iris calibration adjustments.

Major Causes

1. The connection of the iris block is faulty.
2. Iris block (Hall device) is faulty.

(4) Error Message No. 4

```
                 ERROR !!

    MAY BE DEVICE ON THE SET IS BROKEN

          **** HIT ANY KEY ****
```

Fig. 2-104

(4) Error message displayed during auto iris control and iris calibration adjustments.

Major Causes

1. Data line is faulty.
2. The video signal processor (including the VTR block) is faulty.
3. DSP jig is faulty.
4. Adjustment programme (MAP) is faulty.

(5) Error Message No. 5

```
                 ERROR !!
           CAN'T FIND THE DATA FILE
        PLEASE CONFIRM THE DATA FILE
          **** HIT ANY KEY ****
```

Fig. 2-105

(5) Error message displayed when there is an abnormality in the data file for each model.

Major Causes

1. The wrong madel has been specified in the first step.

3. VTR SECTION ADJUSTMENT

3-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITION

Adjustments other than “Power Shut Off Level Adjustment” can be done with the unassembled VTR block.

1. Main Circuit Board
2. IR/LED Circuit Board
3. Operation Switch Unit

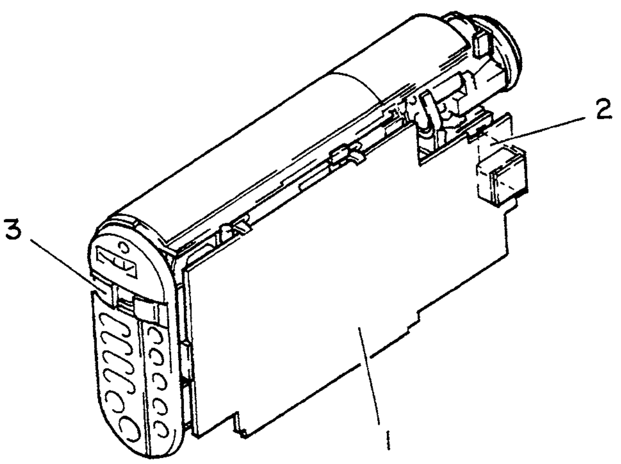


Fig. 3-1

3-2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

- Test Equipment
  - Oscilloscope (dual trace)
  - Digital Voltmeter (DVM)
  - Frequency Counter
  - Millivoltmeter
  - Colour Video Monitor
  - Colour Bar Generator
  - C/R Oscillator
- Alignment Tape, etc.
  - Alignment Tape (20HSC-3)
  - Blank Tape
  - ATF-R Jig
  - DC Power Supply (DC 0~7V/3A)
  - DC Power Supply (DC 5V/1A)

3-3. ADJUSTMENT CONDITION

1) Check that the camera section has been adjusted correctly before adjusting the VTR section
2) Connect this unit, a power supply and a colour video monitor as shown in Fig. 1-1.
3) Use the 10:1 probe of the oscilloscope when other not specified.
4) When “Record mode” is specified, load a blank tape and set the 8mm video camera/recorder to the record mode by the following procedure.
   ① Set the POWER switch to the CAMERA position.
   ② Press the REC START/STOP button on the unit (or REC START/STOP button on the remote control).
5) Before adjusting the resistors marked with asterisks in the following text, remove the corresponding laser trimming resistors to replace them with the specified semi-variable resistors.
6) Before unsoldering laser triminng resistors be sure to confirm each adjustment value. Remove only the resistors used in the adjustment items that should be adjusted.

3-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ..... “VIDEO” position
- TITLE .... Not Display mode
- Hi-8 switch .... AUTO position

The video and audio signals can be input to a model without the AV input function in the following two ways.

Note: The following methods are used for adjustment and checking. Do not use them for any purposes other than adjustment or checking.

① Short the collector of Q200 on the main circuit board (side B) to ground. (Fig. A) Be sure to disconnect the short-circuit after adjustment.

② Modify the AV input cable. Change the connection of pin 13 of the AV input cable from ground to pin 2 (DC5V). (After checking that pin 13 and ground are not connected, connot pin 13 to pin 2 (DC5V)).

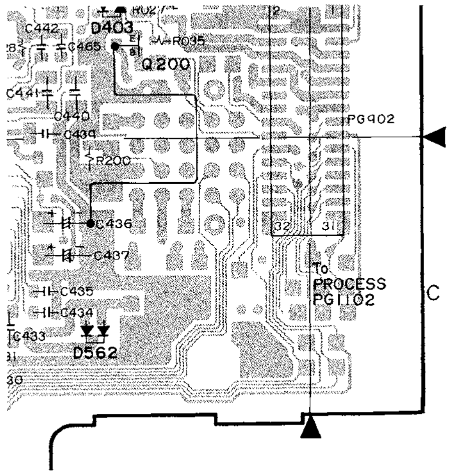
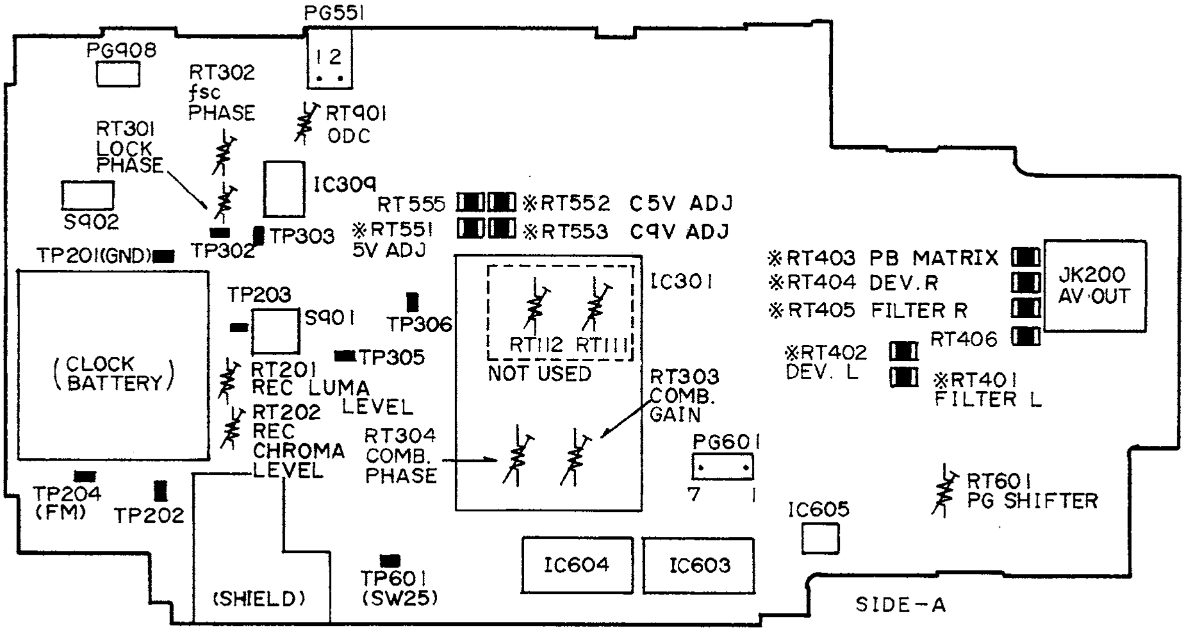
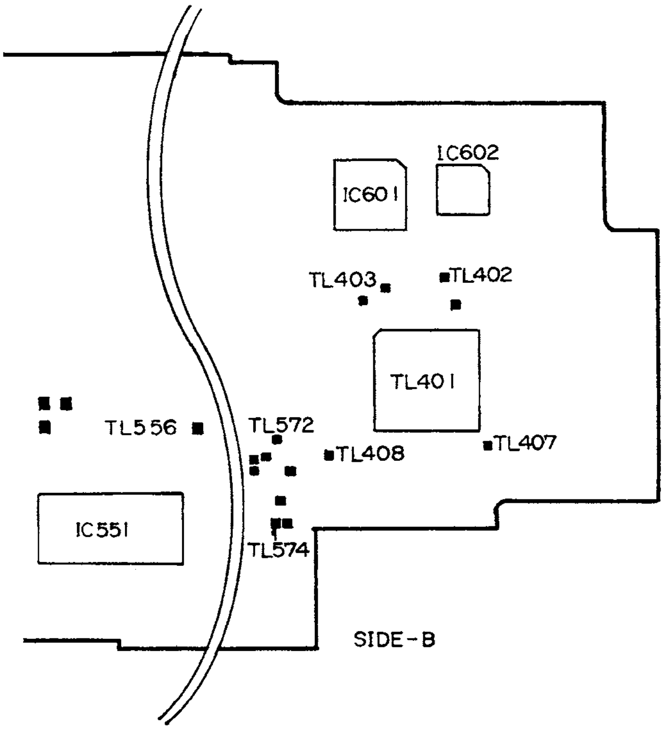


Fig. A

3-5. ADJUSTMENT COMPONENTS LOCATIONS


PG551
1 2
PG908
RT302
fsc
PHASE
RT901
ODC
RT301
LOCK
PHASE
IC309
S902
RT555
※RT552 C5V ADJ
※RT551
5V ADJ
※RT553 C9V ADJ
TP201(GND)
TP302
TP303
※RT403 PB MATRIX
※RT404 DEV.R
※RT405 FILTER R
RT406
JK200
AV·OUT
TP203
S901
TP306
IC301
RT112 RT111
NOT USED
TP305
(CLOCK BATTERY)
RT201
REC LUMA LEVEL
RT202
REC CHROMA LEVEL
RT304
COMB.
PHASE
RT303
COMB.
GAIN
※RT402
DEV. L
※RT401
FILTER L
PG601
7 1
RT601
PG SHIFTER
TP204
(FM)
TP202
IC605
IC604
IC603
TP601
(SW25)
(SHIELD)
SIDE-A


IC602
IC601
TL403
TL402
TL401
TL556
TL572
TL408
TL407
IC551
TL574
SIDE-B

NOTE: Variable resistors marked ※ are laser trimming resistors.

Fig. 3-2 Main (MAIN) Circuit Board

Note 1 : Before adjusting the resistors marked with asterisks shown in the adjustment parts location diagram, remove the laser trimming resistors to replace them with semi-variable resistors (shown in Table 3-1).

Note 2 : Before soldering semi-variable resistors, insulate their terminals as shown in Fig. 3-3.

Note 3 : Adjust (turn) the soldered semi-variable resistor within the range shown in Fig. 3-3.

Table 3-1

ADJUST POINT	SEMI-VARIABLE RESISTOR (Ω)	C.B.A	NAME OF ADJUSTMENT
RT401	22 k	MAIN	FILTER L
RT402	47 k	MAIN	DEV. L
RT403	47 k	MAIN	PB MATRIX
RT404	47 k	MAIN	DEV. R
RT405	22 k	MAIN	FILTER R
RT551	22 k	MAIN	5V ADJ
RT552	22 k	MAIN	C5V ADJ
RT553	47 k	MAIN	C9V ADJ

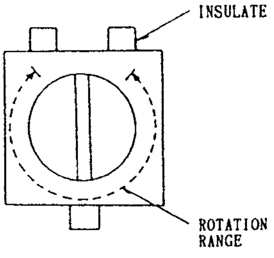

INSULATE
ROTATION RANGE

Fig. 3-3

3-6. ADJUSTMENTS AFTER REPLACING MAJOR COMPONENTS IN THE VTR BLOCK

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are placed.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Note: After replacing the parts, check each adjustment. If you find the items necessary to be adjusted, remove the corresponding laser trimming resistors and replace them with variable resistors for adjustment.

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		MAIN C.B.A	CYLINDER	IC901	IC601 IC602	IC201 IC202	IC301	IC306 IC308
	SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT							
(1)	Power Shut Off Level Adjustment	●		●	●			
(2)	Head Switching Point Adjustment	●	●	●	●			
	LUMINANCE/CHROMA CIRCUIT ADJUSTMENT							
(1)	Record Luminance/Chroma Signal Adjustment	●	●			●	●	●
(2)	Luminance/Chroma Separate Adjustment	●	●			●	●	●
(3)	Colour Alignment Adjustment	●						●
	AUDIO CIRCUIT ADJUSTMENT							
(1)	Band Pass Filter (BPF) Adjustment							
(2)	Deviation Adjustment							
(3)	Playback Matrix Adjustment							
	DC-DC CONVERTER ADJUSTMENT							
(1)	Output Voltage Adjustment							

ITEM	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS						
		IC309	IC401	IC551				
	SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT							
(1)	Power Shut Off Level Adjustment							
(2)	Head Switching Point Adjustment							
	LUMINANCE/CHROMA CIRCUIT ADJUSTMENT							
(1)	Record Luminance/Chroma Signal Adjustment	●						
(2)	Luminance/Chroma Separate Adjustment	●						
(3)	Colour Alignment Adjustment	●						
	AUDIO CIRCUIT ADJUSTMENT							
(1)	Band Pass Filter (BPF) Adjustment		●					
(2)	Deviation Adjustment		●					
(3)	Playback Matrix Adjustment		●					
	DC-DC CONVERTER ADJUSTMENT							
(1)	Output Voltage Adjustment			●				

3-7. SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT

(1) Power Shot Off Level Adjustment (Figs. 3-2, 3-4)

Note 1: Perform this adjustment after replacing the main circuit board (system control microprocessor).
Note 2: Be sure to connect the camera block and EVF for this adjustment.

PURPOSE	• To set the minimum voltage required to operate the camera/recorder.			
INCOMPLETED PHENOMENON	• The usable time of the battery becomes short. • The camera/recorder deos not operate normally.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•DC Power Supply (0 ~ 7V) •DVM •ATF-R Jig (SW3 : ON)	•PG551-2 MAIN •PG551-1 (GND) MAIN •PG601 MAIN	•Connect the ATF-R jig to PG601. •Connect the DC power supply to PG551-2. •Connect the DVM to PG551-2.	•RT901 (ODC) MAIN	Obtain the same display as in Fig. 3-4 at 5.65V ± 0.01V.

1) Connect the ATF-R jig and then the power supply.
2) Adjust the voltage control of the DC power supply so the voltage at PG551-2 is 5.65V ± 0.01V.
3) Adjust RT901 so the same battery level indication as in Fig. 3-4 appears on the monitor screen. (Set the test mode indication under the battery mark to E3 - E5.)
4) Disconnect ATF-R jig from PG601.

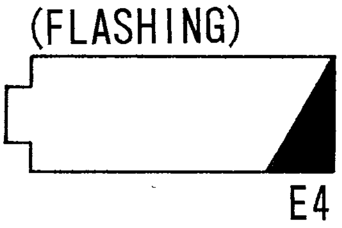


Fig. 3-4

(2) Head Switching Point Adjustment (Figs. 3-2, 3-5)

Note: Be sure to perform this adjustment after replacing the cylinder assembly and main circuit board.

PURPOSE	• To set the switching point of the video heads during playback.			
INCOMPLETED PHENOMENON	• Vertical jitter occurs. • Switching noise appears across the bottom of the monitor screen.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •Alignment Tape •ATF-R Jig (SW3:OFF)	•Video Out (A/V OUT) •TP1 (SW25) ATF-R •TP2 (GND) ATF-R	•Playback the alignment tape. •Connect the ATF-R jig to PG601.	•RT601 MAIN (PG SHIFT)	7H ± 0.5H

1) Connect the oscilloscope to video out.
2) Connect the oscilloscope to TP1 (SW25).
3) Trigger the oscilloscope at SW25Hz.
4) Set the oscilloscope to the (-) slope.
5) Adjust that the trailing edge of the SW25Hz signal is 7H ± 0.5H (horizontal) line before the start of channel-1 vertical sync.
6) Set the oscilloscope to the (+) slope and confirm that the leading edge of the SW25Hz signal is 7H ± 0.5H (horizontal) line before the start of channel-2 vertical sync.

Note: The waveform of channel-1 and channel-2 video signals in the diagram may be opposite depending on the alignment tape.

7) Disconnect ATF-R jig from PG601.

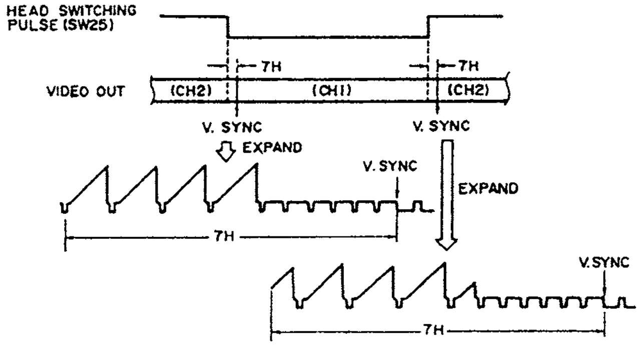


Fig. 3-5

3-8. LUMINANCE/CHROMA CIRCUIT ADJUSTMENT

(1) Record Luminance/Chroma Level Adjustment (Figs. 3-2, 3-6, 3-7)

Note: Be sure to perform this adjustment after replacing the cylinder.

PURPOSE	· To set the luminance and chroma signals to the specified values.
INCOMPLETED PHENOMENON	· The luminance and chroma S/Ns diteriorate. · Cross-beats appear on the monitor screen. · Black and white are inverted in picture.

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·Oscilloscope ·Colour bar chart ·ATF-R Jig (SW3:ON)	·TP202 (REC Y) MAIN ·TP203 (REC C) MAIN ·TP201 (GND) MAIN ·Video Out (A/V OUT)	·Input the colour bar signal. ·Connect the ATF-R jig to PG601. ·Hi-8 switch : AUTO ·No tape required.	·RT201 MAIN (REC LUMA LEVEL) ·RT202 MAIN (REC CHROMA LEVEL)	·210mV ± 5mVp-p ·170mV ± 5mVp-p

Note: Be sure not to load tape.

1) Connect the ATF-R jig to PG601 and turn the power off.
2) Press the STOP button on the operation switch unit and hold it, then supply power.
3) Connect the oscilloscope to TP202.
4) Trigger the oscilloscope at video signal.
5) Adjust RT201 so that the sync tip section in record luminance signal is 210mV ± 5mVp-p. (Fig. 3-6)
6) Set the Hi-8 switch to the OFF position.
7) Connect the oscilloscope to TP203.
8) Adjust RT202 so that the burst section in record chroma signal is 170mV ± 5mVp-p. (Fig. 3-7)

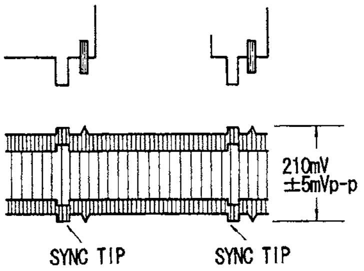


Fig. 3-6

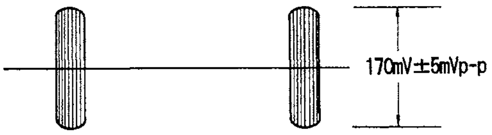


Fig. 3-7

(2) Luminance/Chroma Separate Adjustment (Figs. 3-2, 3-8)

PURPOSE	· To separate the luminance and chroma signals.
INCOMPLETED PHENOMENON	· The luminance S/N deteriorates.

EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·Oscilloscope ·Colour bar Generator	·TP305 MAIN ·TP201 (GND) MAIN ·Video Out (A/V OUT)	·Input the colour bar signal. ·STOP mode ·Hi-8 switch : AUTO	·RT304 MAIN (COMB. PHASE) ·RT303 MAIN (COMB. GAIN)	Minimize the burst signal

1) Connect the oscilloscope to TP305.
2) Trigger the oscillosccope at video signal.
3) Adjust RT303 and RT304 so that the burst level is minimum.

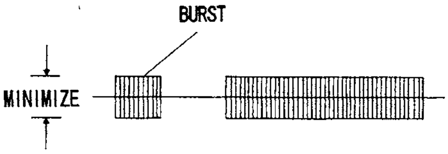


Fig. 3-8

(3) Colour Alignment Adjustment (Figs. 3-2, 3-9)

PURPOSE	·To set the tint in the colour alignment circuit.			
INCOMPLETED PHENOMENON	·No colour appears during trick play or colour reproduction becomes defective.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·Vectorscope ·Alignment Tape	·TP302 MAIN ·TP303 MAIN ·Video Out (A/V OUT) ·TP201 (GND) MAIN	·Playback the alignment tape.	·RT301 MAIN (LOCK PHASE) ·RT302 MAIN (fsc PHASE)	

1) Connect a vectorscope terminated with 75 ohms to the video output (AV OUT).
2) Supply the power (5V DC) to TP303 via a 1kΩ resistor.
3) Adjust RT301 so the YL chroma phase is aligned (± 10deg) when 5V DC is applied to TP302 via a 1kΩ resistor and when TP302 is not connected (open).
4) Connect TP303 to ground via a 1kΩ resistor.
5) Adjust RT302 so the YL chroma phase is aligned (± 10deg) when 5V DC is applied to TP302 via a 1kΩ resistor and when TP302 is not connected (open).
6) Perform steps 2) - 5) again.

Note: RT301 and RT302 can be adjusted only when 5V DC is applied to TP302 via a 1kΩ resistor.

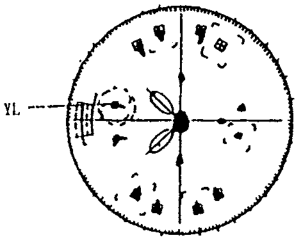


Fig. 3-9

3-9. AUDIO CIRCUIT ADJUSTMENT

Note: Before adjusting the audio circuits, prepare a tape on which 1kHz, -7.8 ± 3dB audio signals are recorded on the L and R channels (referred to as the audio tape hereafter).

(1) Band Pass Filter (BPF) Adjustment (Figs. 3-2, 3-10, 3-11)

PURPOSE	· To set the bandpass frequency of the BPF.			
INCOMPLETED PHENOMENON	· No audio output.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
·Oscilloscope	·TL403 MAIN ·TL402 MAIN ·Audio GND (A/V OUT)	·Playback the Audio Tape	*RT401 MAIN (FILTER L) *RT405 MAIN (FILTER R)	

1) Connect the oscilloscope to TL403.
2) Trigger the oscilloscope at SW25.
3) Adjust RT401 so the waveform is as shown in Fig.3-10.
4) Connect the oscilloscope to TL402.
5) Adjust RT405 to maximize the amplitude of the waveform. (See Fig. 3-11)

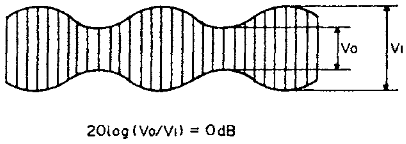


Fig. 3-10

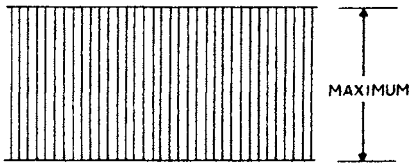


Fig. 3-11

(2) Deviation Adjustment (Fig. 3-2)

PURPOSE	•Set the audio output level.			
INCOMPLETED PHENOMENON	•L-channel and R-channel audio levels are different.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Millivoltmeter	•TL408 MAIN •TL407 MAIN •Audio GND (AV OUT)	•Playback the Audio Tape.	*RT402 MAIN (DEV. L) *RT404 MAIN (DEV. R)	-15dB ± 0.5dB

1) Connect the millivoltmeter to TL408.
2) Adjust RT402 for -15dB ± 0.5dB.
3) Connect the millivoltmeter to TL407.
4) Adjust RT404 for -15dB ± 0.5dB.

(3) Playback Matrix Adjustment (Fig. 3-2)

PURPOSE	•To separate the L-channel and R-channel audio appropriately during playback.			
INCOMPLETED PHENOMENON	•L-channel and R-channel audio cannot be played back appropriately.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•Oscilloscope •C/R Oscillator	•Audio input L-channel (AV OUT) •Audio Output R-channel (AV OUT) •Audio GND (AV OUT)	•Playback the Audio Tape.	*RT403 MAIN (PB MATRIX)	Minimize the waveform.

1) Input the audio signal to audio input L-channel.
2) Connect the osilloscope to audio output R-channel.
3) Trigger the oscilloscope internally.
4) Adjust RT403 to minimize the waveform.

3-10. DC-DC CONVERTER CIRCUIT ADJUSTMENT

Note: Be sure to confirm the DC-DC converter output voltage after replacing components other than the fuse in the converter.

(1) Output Voltage Confirmation/Adjustment (Fig. 3-2)

PURPOSE	• To set the DC-DC converter output voltage to the specified value.			
INCOMPLETED PHENOMENON	• The camera/recorder does not operate normally.			
EQUIPMENT/JIG	TEST POINTS	CONDITION	ADJUST POINTS	SPECIFICATION
•DVM	•TL556 (5V) MAIN •PG551-1 (GND) MAIN •TL572 (C5V) MAIN •TL574 (C9V) MAIN		*RT551 MAIN (5V ADJ) *RT552 MAIN (C5V ADJ) *RT553 MAIN (C9V ADJ)	•5.05V ± 0.03V •4.93V ± 0.03V •9.1V ± 0.03V

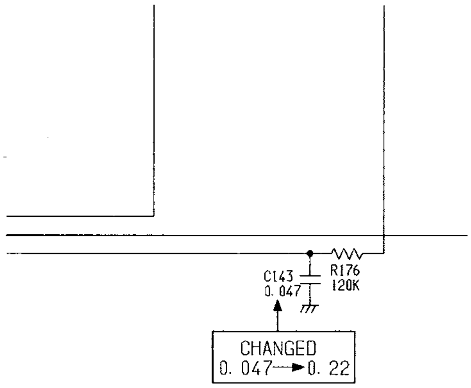
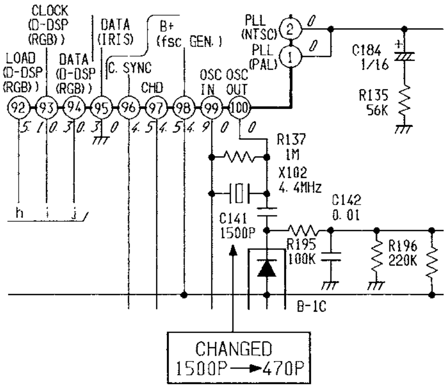
♦Confirmation
1) TL556 : 5.05V ± 0.03V
2) TL572 : 4.93V ± 0.03V
3) TL574 : 9.1V ± 0.03V

♦Adjustment
1) Adjust RT551 so the voltage at TL556 is 5.05V ± 0.03V.
2) Adjust RT552 so the voltage at TL572 is 4.93V ± 0.03V.
3) Adjust RT553 so the voltage at TL574 is 9.1V ± 0.03V.

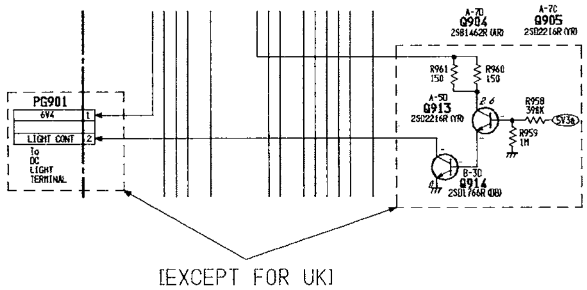
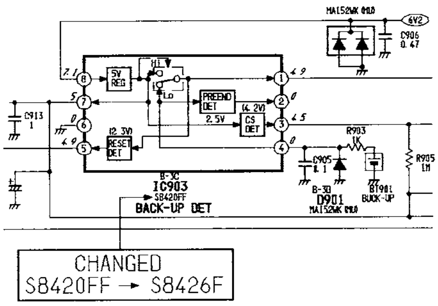
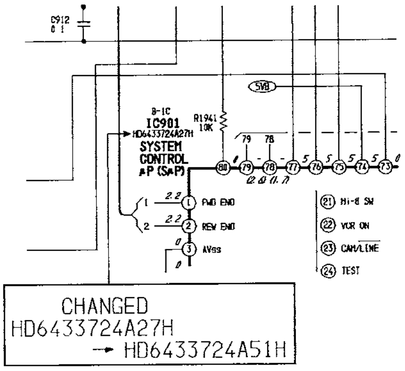
CHANGE OF SCHEMATIC DIAGRAMS

1. PROCESS(SENSOR DRIVE SECTION) Schematic Diagram (schematic on page 5-6 in the Service Manual.)

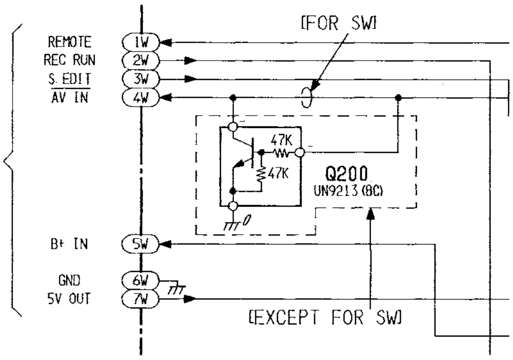
2. PROCESS(DIGITAL SECTION) Schematic Diagram (schematic on page 5-8 in the Service Manual.)

Section of Change	Section of Change
1) Page 5-6 (A-6)	2) Page 5-8 (B-7)
 C143 0.047 R176 120K CHANGED 0.047 → 0.22	 CLOCK (D-DSP (RGB)) DATA (IRIS) B+ (fsc GEN.) PLL (NTSC) PLL (PAL) LOAD (D-DSP (RGB)) DATA (D-DSP (RGB)) C. SYNC CHD OSC IN OSC OUT C184 1/16 R135 56K R137 1M X102 4.4MHz C141 1500P C142 0.01 R195 100K R196 220K B-1C h i j CHANGED 1500P → 470P Note) IC103 HG51A009A01FB or HD49801FB

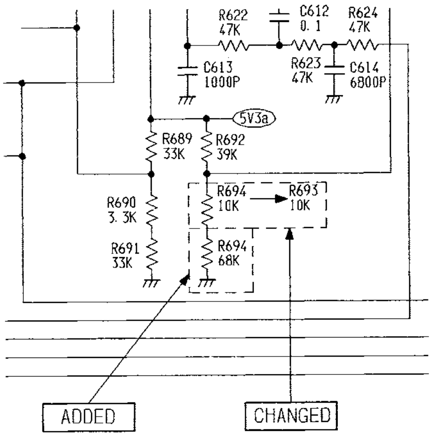
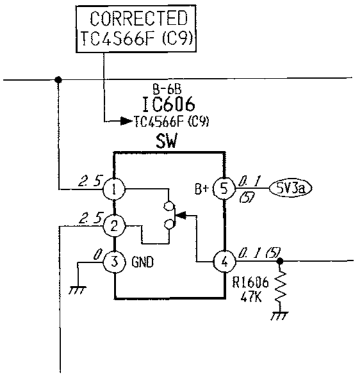
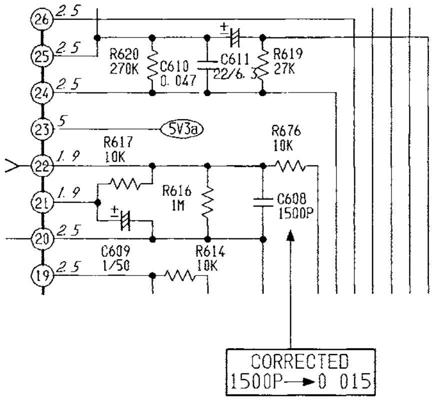
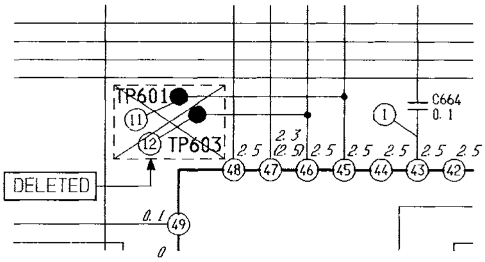
3. MAIN(SYSTEM CONTROL SECTION) Shematic Diagram (schematic on pages 5-11 to 5-12 in the Service Manual.)

Section of Change	Section of Change
3) Page 5-11 (C-2)	4) Page 5-11 (E-3)
CORRECTED  PG901 6V4 LIGHT CONT To DC LIGHT TERMINAL A-7D Q904 2SB1462R (AR) A-7C Q905 2SD2216R (YR) R961 150 R960 150 A-5D Q913 2SD2216R (YR) R958 390K R959 1M B-3D Q914 2SD1766R (QR) [EXCEPT FOR UK]	 MA152WK 6V2 C906 0.47 C913 1 5V REG PREEND DET CS DET RESET DET B-3C IC903 S8420FF BACK-UP DET R903 1K C905 0.1 B-3D D901 BT901 BACK-UP R905 1M CHANGED S8420FF → S8426F
5) Page 5-12 (D-4)	
 C912 0.1 5V8 B-1C IC901 HD6433724A27H SYSTEM CONTROL µP (SAP) R1941 10K FWD END REV END AVss Hi-8 SW VCR ON CAM/LINE TEST CHANGED HD6433724A27H → HD6433724A51H	

4. **MAIN(SUB SYSTEM CONTROL SECTION) Shematic Diagram**
(schematic on pages 5-13 to 5-14 in the Service Manual.)

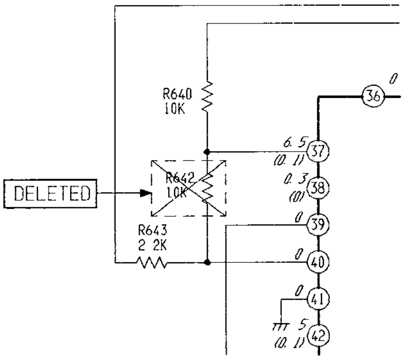
Section of Change	Section of Change
6) Page 5-13 (A-2)	
CORRECTED  REMOTE REC RUN S.EDIT AV IN 1W 2W 3W 4W [FOR SW] 47K 47K Q200 UN9213 (8C) 0 B+ IN 5W GND 5V OUT 6W 7W [EXCEPT FOR SW]	

5. **MAIN(SERVO SECTION) Shematic Diagram** (schematic on pages 5-15 to 5-16 in the Service Manual.)

Section of Change	Section of Change
7) Page 5-15 (A-2)	8) Page 5-15 (A-4)
 R622 47K C612 0.1 R624 47K C613 1000P R623 47K C614 6800P 5V3a R689 33K R692 39K R690 3.3K R694 10K R693 10K R691 33K R694 68K ADDED CHANGED	 CORRECTED TC4S66F (C9) B-6B IC606 TC4S66F (C9) SW 2.5 1 2.5 2 0 3 GND B+ 5 0.1 (5) 5V3a 4 0.1 (5) R1606 47K
9) Page 5-15 (D-4)	10) Page 5-15 (E-2)
 26 2.5 25 2.5 24 2.5 23 5 5V3a 22 1.9 21 1.9 20 2.5 19 2.5 R620 270K C610 0.047 C611 22/6.3 R619 27K R617 10K R676 10K R616 1M C608 1500P C609 1/50 R614 10K CORRECTED 1500P→0.015	 TP601 11 12 TP603 DELETED C664 0.1 1 2.5 2.3 (2.5) 2.5 2.5 2.5 2.5 2.5 48 47 46 45 44 43 42 0.1 49 0

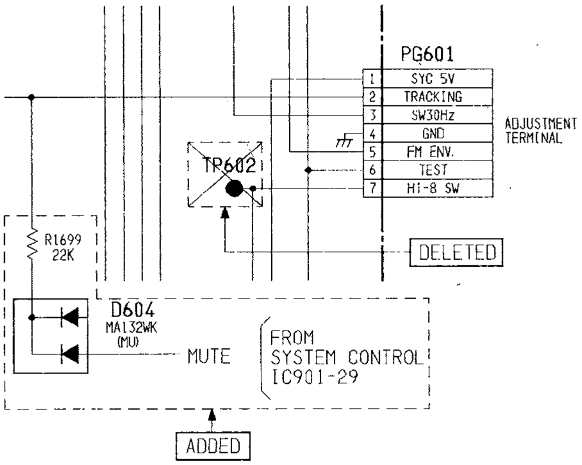
Section of Change

11) Page 5-16 (C-5)

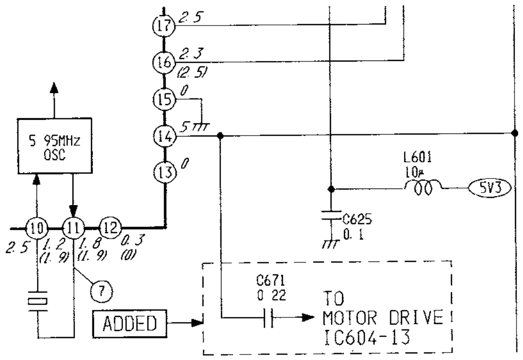

R640
10K
R642
10K
R643
2 2K
DELETED
36
0
37
6 5
(0 1)
38
0 3
(0)
39
0
40
0
41
0
42
5
(0 1)

Section of Change

12)Page 5-16 (D-6,7)


PG601
1 SYC 5V
2 TRACKING
3 SW30Hz
4 GND
5 FM ENV.
6 TEST
7 Hi-8 SW
ADJUSTMENT
TERMINAL
TP602
DELETED
R1699
22K
D604
MA132WK
(MU)
MUTE
FROM
SYSTEM CONTROL
IC901-29
ADDED

13) Page 5-16 (B-7)

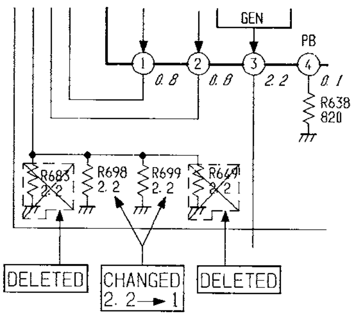

17
2 5
16
2 3
(2 5)
15
0
14
5
13
0
5 95MHz
OSC
10
11
12
2 5
1 2
(1 9)
1 8
(1 9)
0 3
(0)
7
L601
10μ
5V3
C625
0 1
C671
0 22
TO
MOTOR DRIVE
IC604-13
ADDED

6. MAIN(MOTOR DRIVE SECTION) Shematic Diagram

(schematic on pages 5-19 to 5-20 in the Service Manual.)

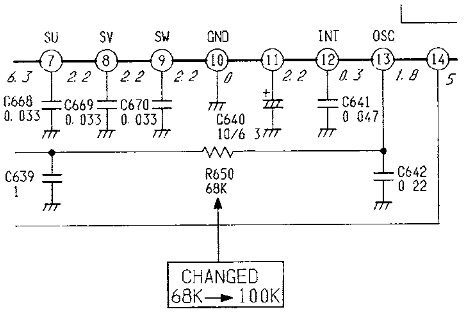
Section of Change

14) Page 5-19 (D-2)


GEN
PB
1
2
3
4
0 8
0 8
2 2
0 1
R638
820
R683
2 2
R698
2 2
R699
2 2
R649
2 2
DELETED
CHANGED
2. 2→ 1
DELETED

Section of Change

15) Page 5-19 (D-4)


SU
SV
SW
GND
INT
OSC
7
8
9
10
11
12
13
14
6 3
2 2
2 2
2 2
0
2 2
0 3
1 8
5
C668
0. 033
C669
0. 033
C670
0. 033
C640
10/6 3
C641
0 047
C639
1
R650
68K
C642
0 22
CHANGED
68K→ 100K

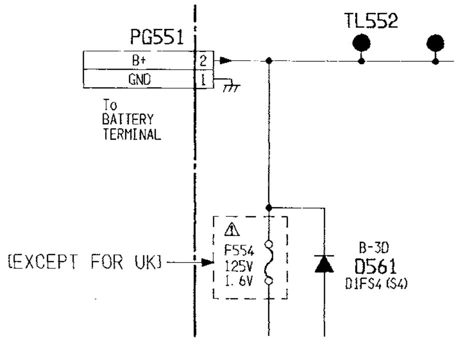
7. MAIN(DC-DC CONVERTER SECTION) Shematic Diagram

(schematic on pages 5-23 to 5-24 in the Service Manual.)

Section of Change

16) Page 5-23 (E-1)

CORRECTED


PG551
B+
GND
2
1
To
BATTERY
TERMINAL
TL552
[EXCEPT FOR UK]
F554
125V
1.6V
B-3D
D561
D1FS4 (S4)

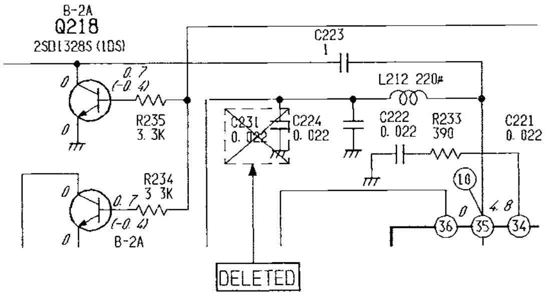
Section of Change

8. MAIN(PRE-AMP SECTION) Shematic Diagram

(schematic on pages 5-27 to 5-28 in the Service Manual.)

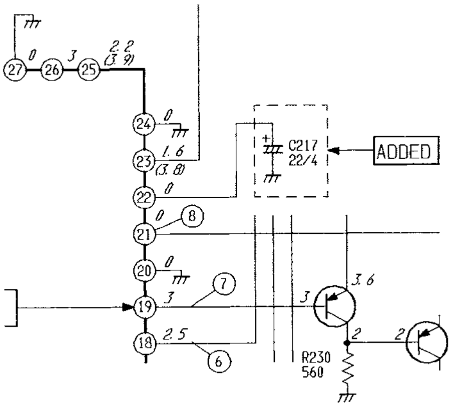
Section of Change

17) Page 5-27 (E-2)

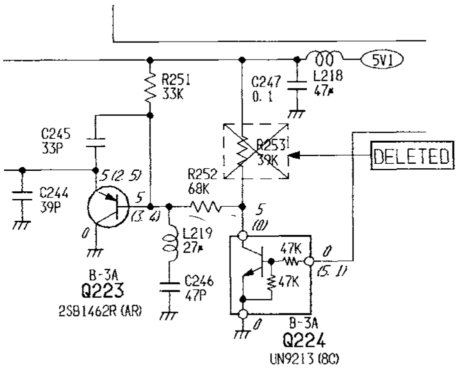

B-2A
Q218
2SD1328S (1DS)
C223
1
L212 220μ
R235
3.3K
C231
0.022
C224
0.022
C222
0.022
R233
390
C221
0.022
R234
3.3K
B-2A
36
35
34
18
DELETED

Section of Change

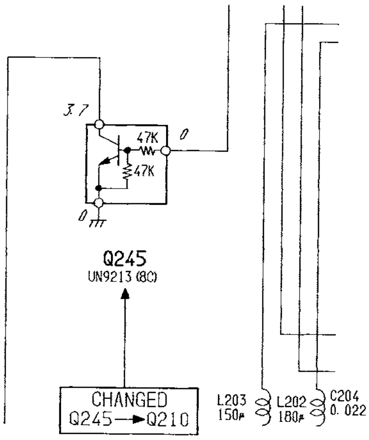
18) Page 5-27 (D-4)


27
26
25
24
23
22
21
20
19
18
C217
22/4
ADDED
8
7
6
R230
560

19) Page 5-27 (B-2)

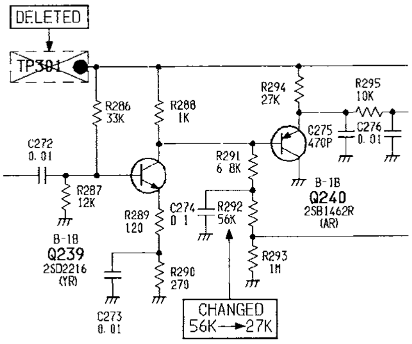

5V1
R251
33K
C247
0.1
L218
47μ
C245
33P
R253
39K
DELETED
C244
39P
R252
68K
L219
27μ
C246
47P
47K
47K
B-3A
Q223
2SB1462R (AR)
B-3A
Q224
UN9213 (8C)

20) Page 5-27 (B-4)


47K
47K
Q245
UN9213 (8C)
CHANGED
Q245→Q210
L203
150μ
L202
180μ
C204
0.022

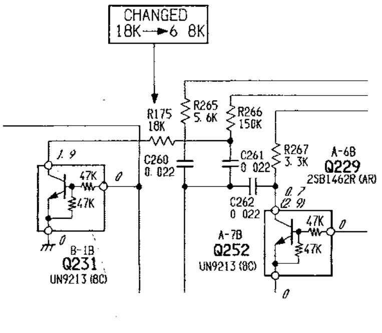
Section of Change

21) Page 5-28 (E-5)

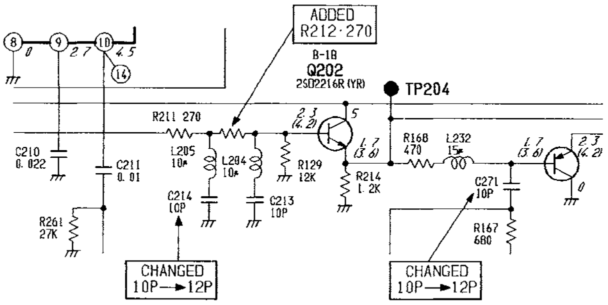

DELETED
TP301
R286
33K
R288
1K
R294
27K
R295
10K
C275
470P
C276
0. 01
C272
0. 01
R287
12K
R291
6 8K
B-1B
Q240
2SB1462R
(AR)
B-1B
Q239
2SD2216
(YR)
R289
120
C274
0 1
R292
56K
R293
1M
R290
270
C273
0. 01
CHANGED
56K→27K

Section of Change

22) Page 5-28 (D-6)


CHANGED
18K→6 8K
R175
18K
R265
5. 6K
R266
150K
C260
0. 022
C261
0 022
R267
3. 3K
A-6B
Q229
2SB1462R (AR)
1. 9
47K
47K
0
0
B-1B
Q231
UN9213 (8C)
C262
0 022
0. 7
(2. 9)
A-7B
Q252
UN9213 (8C)
47K
47K
0
0

23) Page 5-28 (B-6)

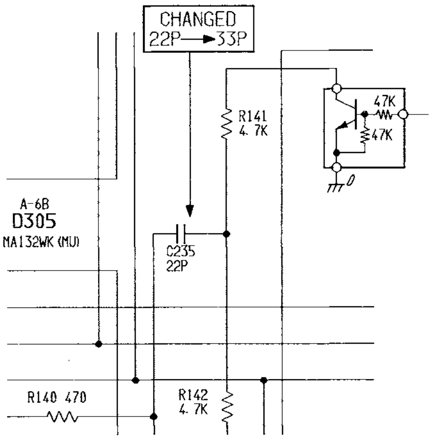

ADDED
R212·270
B-1B
Q202
2SD2216R (YR)
TP204
8
9
10
14
0
2.7
4.5
R211 270
2.3
(4.2)
5
1.7
(3.6)
C210
0. 022
C211
0. 01
L205
10µ
L204
10µ
R129
12K
R214
1. 2K
R168
470
L232
15µ
1.7
(3.6)
2.3
(4.2)
0
C271
10P
R167
680
C214
10P
C213
10P
R261
27K
CHANGED
10P→12P
CHANGED
10P→12P

9. MAIN(Y SECTION) Shematic Diagram

(schematic on pages 5-29 to 5-30 in the Service Manual.)

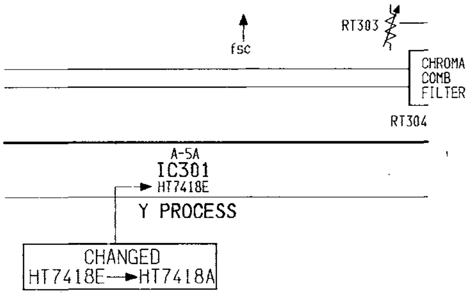
Section of Change

24) Page 5-29 (C-2)


CHANGED
22P→33P
R141
4. 7K
47K
47K
0
A-6B
D305
MA132WK (MU)
C235
22P
R140 470
R142
4. 7K

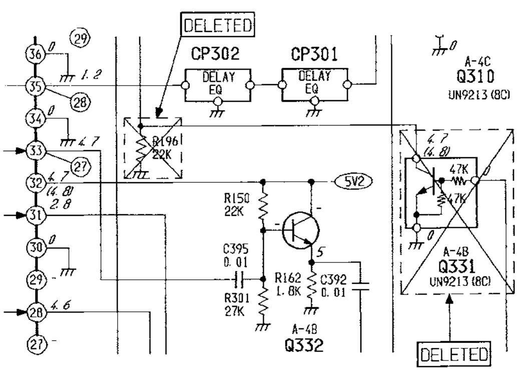
Section of Change

25) Page 5-29 (A-4)


fsc
RT303
CHROMA
COMB
FILTER
RT304
A-5A
IC301
HT7418E
Y PROCESS
CHANGED
HT7418E→HT7418A

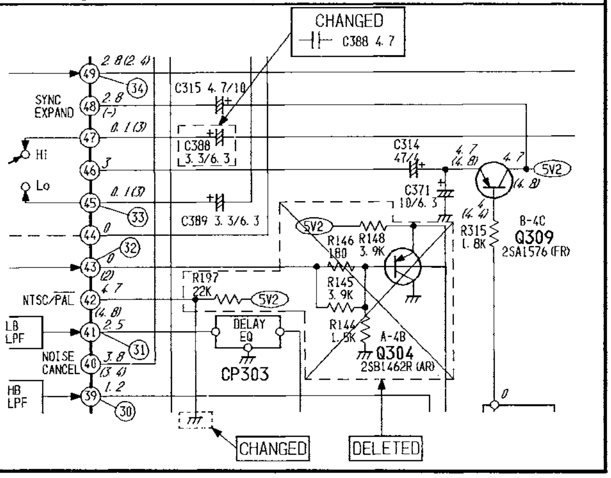
Section of Change

26) Page 5-30 (B-6)


DELETED
CP302
CP301
DELAY EQ
DELAY EQ
A-4C
Q310
UN9213 (8C)
R196
22K
R150
22K
5V2
C395
0.01
R301
27K
R162
1.8K
C392
0.01
A-4B
Q332
47K
47K
A-4B
Q331
UN9213 (8C)
DELETED

Section of Change

27) Page 5-30 (C-5,6)

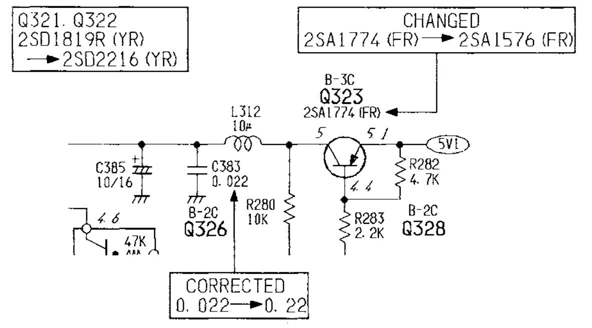

CHANGED
C388 4.7
SYNC EXPAND
Hi
Lo
C315 4.7/10
C388 3.3/6.3
C389 3.3/6.3
C314 47/4
C371 10/6.3
5V2
R146 180
R148 3.9K
R145 3.9K
R144 1.5K
A-4B
Q304
2SB1462R (AR)
R315 1.8K
B-4C
Q309
2SA1576 (FR)
R197 22K
5V2
DELAY EQ
CP303
NTSC/PAL
LB LPF
NOISE CANCEL
HB LPF
CHANGED
DELETED

10. MAIN(SKEW COMPE. SECTION) Shematic Diagram

(schematic on page 5-31 in the Service Manual.)

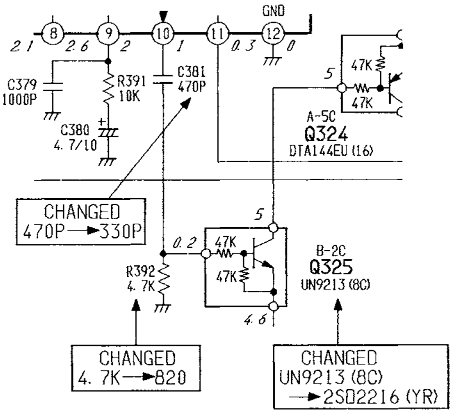
Section of Change

28) Page 5-31 (D,E-1)


Q321, Q322
2SD1819R (YR)
→2SD2216 (YR)
CHANGED
2SA1774 (FR)→2SA1576 (FR)
B-3C
Q323
2SA1774 (FR)
L312
10μ
5V1
C385
10/16
C383
0.022
R280
10K
R282
4.7K
R283
2.2K
B-2C
Q326
B-2C
Q328
47K
CORRECTED
0.022→0.22

Section of Change

29) Page 5-31 (B,C-3)

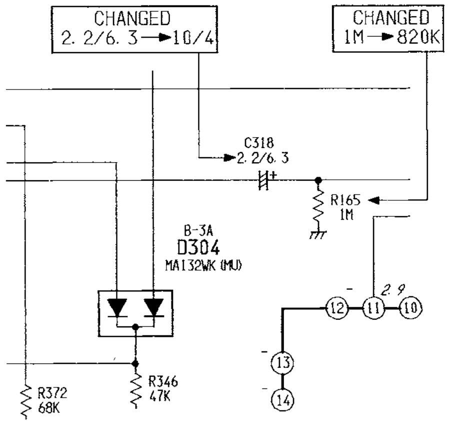

GND
C379
1000P
R391
10K
C381
470P
C380
4.7/10
47K
47K
A-5C
Q324
DTA144EU (16)
CHANGED
470P→330P
47K
47K
R392
4.7K
B-2C
Q325
UN9213 (8C)
CHANGED
4.7K→820
CHANGED
UN9213 (8C)
→2SD2216 (YR)

11. MAIN(CHROMA SECTION) Shematic Diagram

(schematic on pages 5-33 to 5-34 in the Service Manual.)

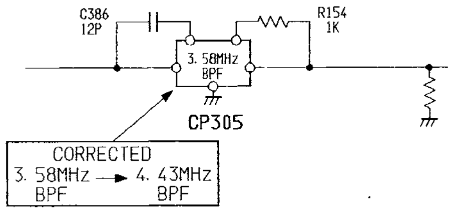
Section of Change

30) Page 5-33 (D-2)


CHANGED
2.2/6.3→10/4
CHANGED
1M→820K
C318
2.2/6.3
R165
1M
B-3A
D304
MA132WK (MU)
R372
68K
R346
47K

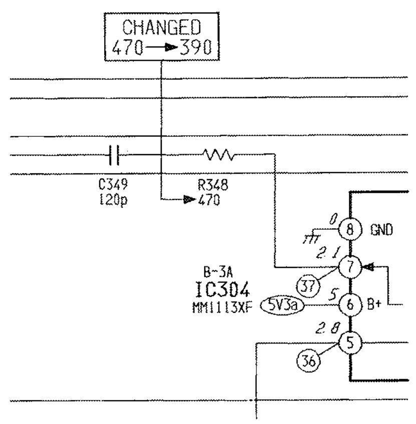
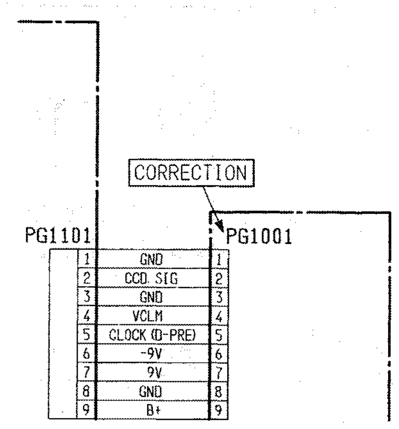
Section of Change

31) Page 5-33 (B-4)


C386
12P
R154
1K
3.58MHz BPF
CP305
CORRECTED
3.58MHz → 4.43MHz
BPF BPF

12. Internal Wiring Diagram

(schematic on pages 5-1 to 5-2 in the Service Manual.)

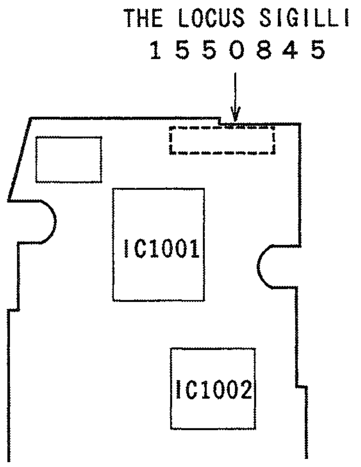
Section of Change	Section of Change
32) Page 5-34 (B-5)	33) Page 5-2 (E-8)
	

CHANGED
470→390
C349
120p
R348
470
B-3A
IC304
MM1113XF
5V3a
0
8
GND
2.1
7
37
5
6
B+
2.8
5
36

CORRECTION
PG1101
PG1001
1 GND 1
2 CCD. SIG 2
3 GND 3
4 VCLM 4
5 CLOCK (D-PRE) 5
6 -9V 6
7 9V 7
8 GND 8
9 B+ 9

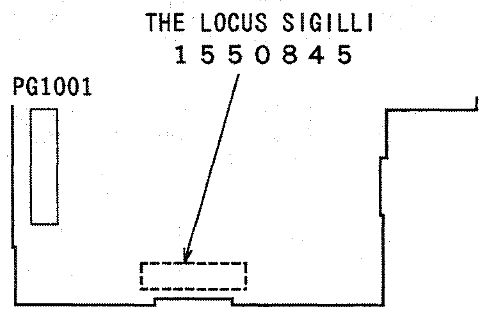
HOW TO DISCRIMINATE THE NEW AND OLD BOARDS

The circuit boards can be discriminated from the pattern numbers as well as the serial numbers.



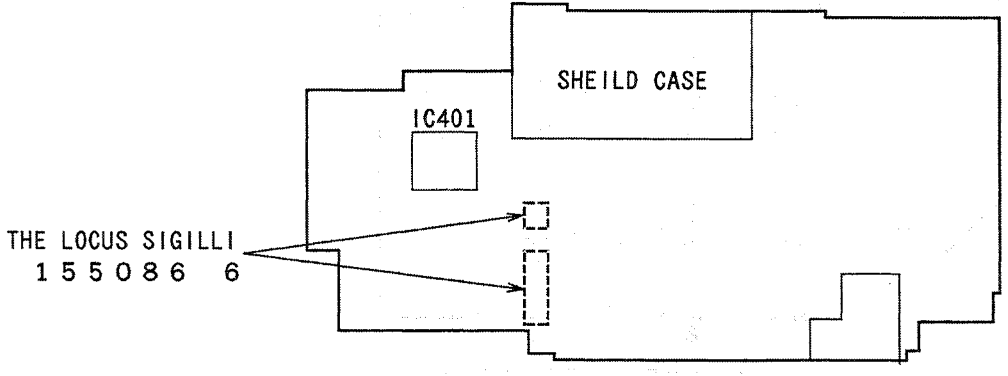
THE LOCUS SIGILLI
1 5 5 0 8 4 5
IC1001
IC1002

SENSOR BOARD (SIDE-B)



THE LOCUS SIGILLI
1 5 5 0 8 4 5
PG1001

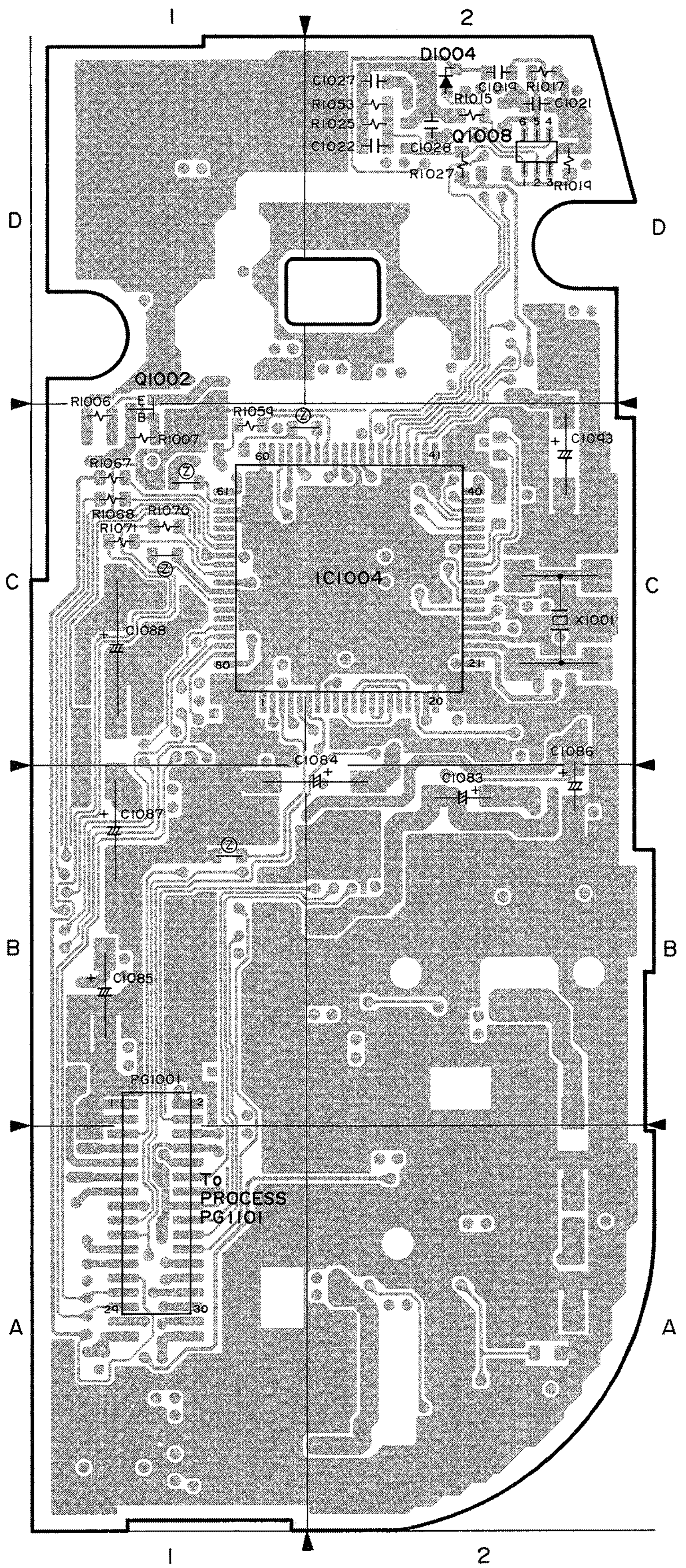
PROCESS BOARD (SIDE-B)



SHEILD CASE
IC401
THE LOCUS SIGILLI
1 5 5 0 8 6 6

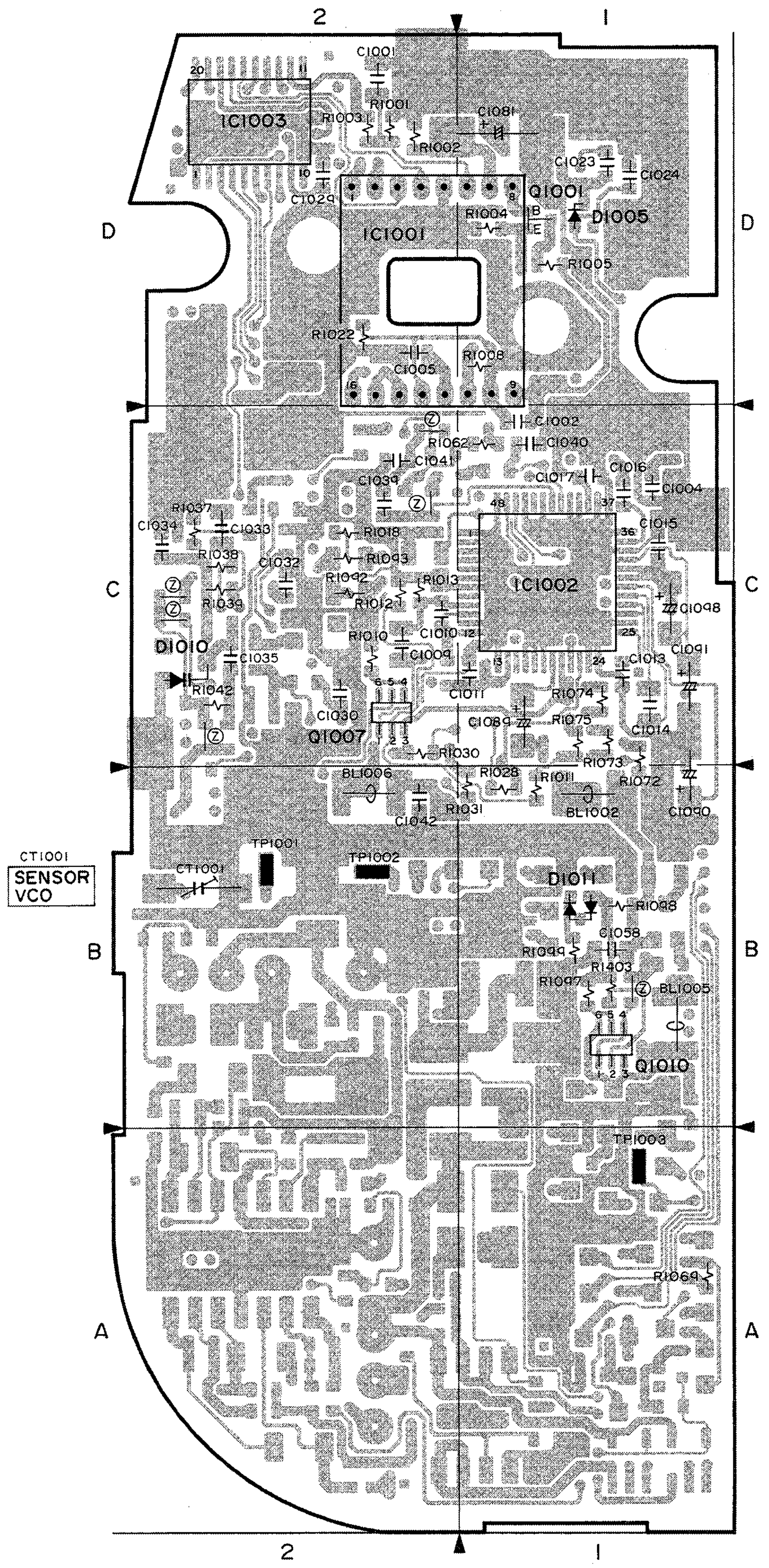
MAIN BOARD (SIDE-B)

SENSOR CIRCUIT BOARD DIAGRAM (PATTERN No. 155084-5)


1
2
A
B
C
D
D1004
C1027
R1053
R1025
C1022
C1019
R1017
R1015
C1021
C1028
Q1008
R1027
R1019
Q1002
R1006
R1007
R1059
R1067
R1068
R1070
R1071
IC1004
C1043
X1001
C1088
C1084
C1083
C1086
C1087
C1085
PG1001
To PROCESS PG1101

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

SENSOR P.C.B (SIDE-A)
[PATTERN No.155084 – 5]


2
1
A
B
C
D
IC1003
C1001
R1001
R1003
R1002
C1081
C1029
C1023
C1024
IC1001
Q1001
D1005
R1004
R1005
R1022
C1005
R1008
C1002
C1040
R1062
C1041
C1039
C1016
C1017
C1004
R1037
C1034
C1033
R1018
R1043
IC1002
C1015
R1038
C1032
R1042
R1013
R1039
R1012
C1098
D1010
R1010
C1010
C1009
C1035
C1091
C1013
R1042
C1030
C1011
R1074
Q1007
C1089
R1075
C1014
R1030
R1073
BL1006
R1028
R1011
R1072
R1031
BL1002
C1042
C1090
CT1001
SENSOR VCO
TP1001
TP1002
D1011
R1098
C1058
R1099
R1403
R1097
BL1005
Q1010
TP1003
R1069

SENSOR P.C.B (SIDE-B)

IDENTIFICATION OF PARTS LOCATION

SENSOR P. C. B

Symbol No.	Parts Location
BL	
BL1002	B-1B
BL1005	B-1B
BL1006	B-2B
C	
C1001	B-2D
C1002	B-1C
C1004	B-1C
C1005	B-2D
C1009	B-2C
C1010	B-2C
C1011	B-1C
C1013	B-1C
C1014	B-1C
C1015	B-1C
C1016	B-1C
C1017	B-1C
C1019	A-2D
C1021	A-2D
C1022	A-2D
C1023	B-1D
C1024	B-1D
C1027	A-2D
C1028	A-2D
C1029	B-2D
C1030	B-2C
C1032	B-2C
C1033	B-2C
C1034	B-2C
C1035	B-2C
C1039	B-2C
C1040	B-1C
C1041	B-2C
C1042	B-2B
C1058	B-1B
C1081	B-1D
C1083	A-2B
C1084	A-2B
C1085	A-1B
C1086	A-2B

Symbol No.	Parts Location
C1087	A-1B
C1088	A-1C
C1089	B-1C
C1090	B-1B
C1091	B-1C
C1093	A-2C
C1098	B-1C
CT	
CT1001	B-2B
D	
D1004	A-2D
D1005	B-1D
D1010	B-2C
D1011	B-1B
IC	
IC1001	B-2D
IC1002	B-1C
IC1003	B-2D
IC1004	A-2C
PG	
PG1001	A-1A
Q	
Q1001	B-1D
Q1002	A-1C
Q1007	B-2C
Q1008	A-2D
Q1010	B-1B
R	
R1001	B-2D
R1002	B-2D
R1003	B-2D
R1004	B-1D
R1005	B-1D
R1006	A-1C
R1007	A-1C
R1008	B-1D
R1010	B-2C
R1011	B-1B
R1012	B-2C
R1013	B-2C

Symbol No.	Parts Location
R1038	B-2C
R1039	B-2C
R1042	B-2C
R1053	A-2D
R1059	A-1C
R1062	B-1C
R1067	A-1C
R1068	A-1C
R1069	B-1A
R1070	A-1C
R1071	A-1C
R1072	B-1C
R1073	B-1C
R1074	B-1C
R1075	B-1C
R1092	B-2C
R1093	B-2C
R1097	B-1B
R1098	B-1B
R1099	B-1B
R1403	B-1B
TP	
TP1001	B-2B
TP1002	B-2B
TP1003	B-1A
X	
X1001	A-2C

PROCESS P. C. B

Symbol No.	Parts Location
BL	
BL1101	B-2A
BL1102	A-2A
BL1103	A-2B
BL1104	B-2B
BL1105	A-2B
BL1106	B-2C
BL1107	B-2C
BL1108	A-2B
BL1109	B-2C
C	
C1101	A-2A
C1103	B-2A
C1104	B-2A
C1105	B-2A
C1106	B-2A
C1107	B-2A
C1109	B-2A
C1110	B-1A
C1111	B-2A
C1117	B-1C
C1118	B-2C
C1119	A-1B
C1120	A-1B
C1121	B-1C
C1122	A-1B
C1123	A-2A
C1124	A-1A
C1125	A-2A
C1126	A-2B
C1127	B-2B
C1128	B-2C
C1129	A-2B
C1130	B-2C
C1134	B-2C
C1135	A-1C
C1136	A-1C
C1137	A-2C
C1138	A-1C
C1139	A-1C

Symbol No.	Parts Location
C1140	A-1C
C1141	A-1B
C1142	A-1C
C1143	A-1B
C1144	A-1B
C1145	A-1B
C1146	A-1B
C1147	A-1B
C1148	A-2A
C1149	B-1A
C1150	B-1C
C1151	A-2A
C1152	A-1A
C1181	A-2A
C1182	A-2A
C1183	A-2B
C1184	B-1C
C1185	A-2B
C1186	A-2B
C1187	A-2B
C1188	A-2C
C1189	A-2B
C1190	A-2C
C1191	A-2C
C1192	A-2B
C1193	A-2C
C1194	A-2B
C1195	A-2B
C1196	A-2C
CP	
CP1101	A-1C
CP1102	A-1C
D	
D1101	A-1A
D1102	B-1C
D1103	A-1B
D1104	A-1C
D1106	B-2B
D1107	B-2C
IC	

Symbol No.	Parts Location
IC1101	B-1A
IC1102	B-2B
IC1103	B-1B
IC1104	B-1C
IC1105	A-1B
IC1106	A-1B
IC1107	B-1A
IC1108	A-1A
IC1110	A-2B
PG	
PG1101	A-2A
PG1102	A-1C
PG1103	B-1C
Q	
Q1101	A-2A
Q1102	B-1B
Q1104	A-1C
Q1105	A-2C
Q1106	B-1A
Q1107	B-2B
Q1108	B-1A
Q1109	B-1C
Q1110	A-1C
R	
R1101	A-2A
R1102	A-1A
R1104	B-1B
R1105	B-1A
R1106	B-1A
R1107	B-2A
R1108	B-2A
R1114	B-1A
R1115	B-1A
R1116	B-2A
R1121	B-2A
R1123	B-2A
R1124	A-1B
R1130	B-2A
R1132	B-2A
R1133	B-2B

Symbol No.	Parts Location
R1134	B-2B
R1135	B-1C
R1136	A-1B
R1137	A-1B
R1138	B-1C
R1140	B-1C
R1144	B-1C
R1145	B-1C
R1146	B-1C
R1147	B-1C
R1148	B-1C
R1149	B-2C
R1150	B-2C
R1151	B-2C
R1152	B-2B
R1153	B-2B
R1154	B-2B
R1155	B-2B
R1156	B-2B
R1157	A-2A
R1158	A-2A
R1159	A-2B
R1160	A-2B
R1161	A-2A
R1162	B-1B
R1163	B-1A
R1164	B-1B
R1166	B-1B
R1167	B-1A
R1168	B-1B
R1170	B-2C
R1171	B-2B
R1173	A-1B
R1174	B-1A
R1176	A-1B
R1177	A-1B
R1178	A-2C
R1179	A-2C
R1181	A-2C
R1182	A-2C

Symbol No.	Parts Location
R1183	A-2C
R1184	A-1C
R1185	A-1C
R1186	A-1C
R1187	A-2C
R1188	A-2C
R1189	A-2C
R1190	A-1C
R1193	A-1C
R1195	A-1C
R1196	A-1C
R1197	A-1C
R1198	A-1C
R1195	A-1C
R1200	A-1B
R1201	A-1B
R1202	A-1B
R1203	A-1B
R1204	A-1B
R1205	A-1B
R1206	A-1A
R1207	B-1A
R1208	A-1A
R1209	B-1C
R1210	B-1C
R1212	B-1B
R1213	A-1A
R1214	A-1A
R1215	A-2A
R1219	A-1A
R1221	B-1B
R1222	B-1A
R1223	B-1B
R1224	B-1A
R1225	B-1A
R1226	B-1C
R1227	B-1C
R1228	B-1C
R1229	B-1C
R1230	B-1C

Symbol No.	Parts Location
R1231	A-1C
R1232	B-1C
R1233	B-1B
R1235	A-2C
R1236	A-1C
R1240	B-1A
R1241	A-1A
TP	
TP1102	A-1C
TP1103	A-1B
X	
X1101	A-1C
X1102	A-1B
X1103	B-1A

IDENTIFICATION OF PARTS LOCATION

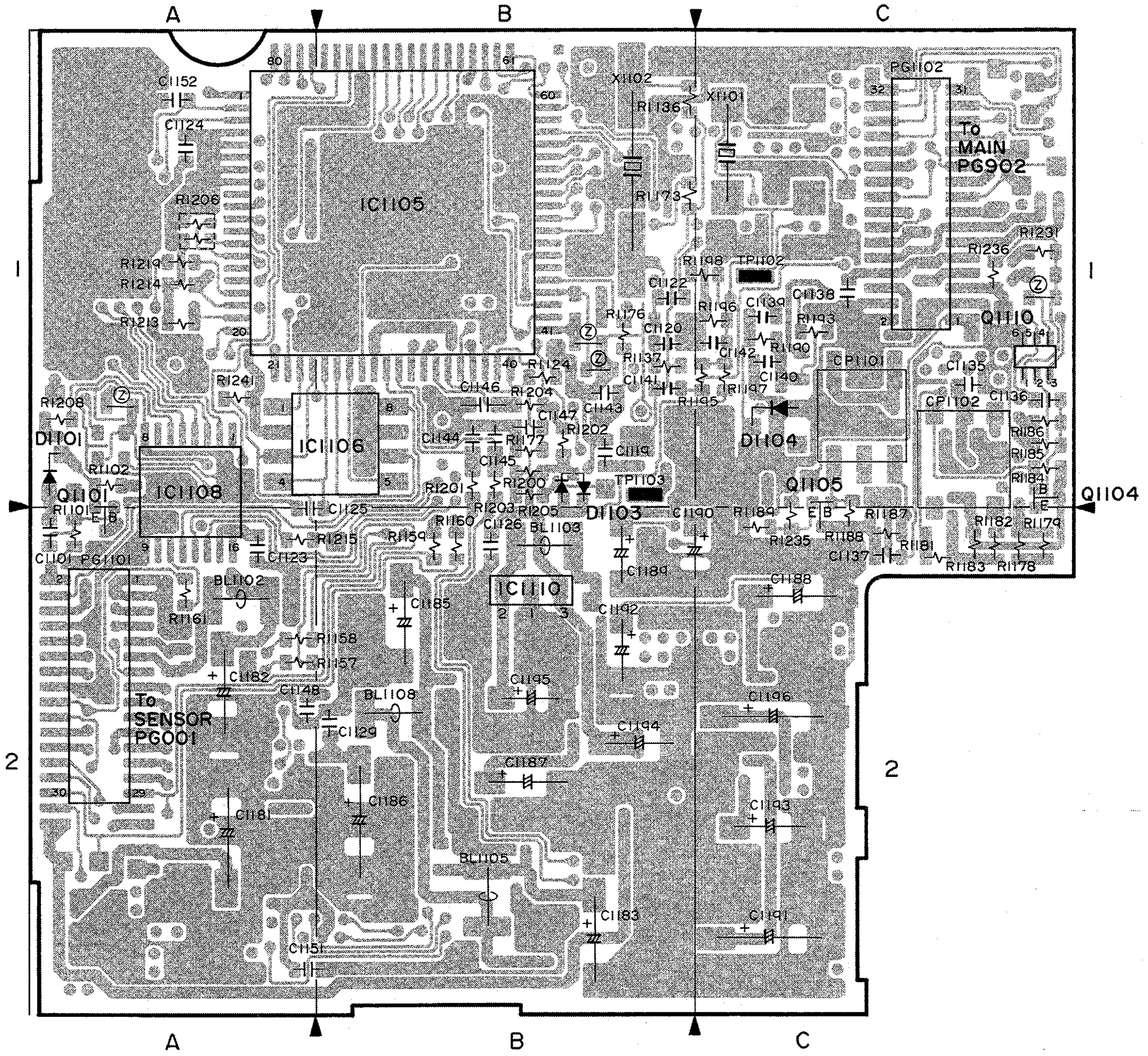
SENSOR P. C. B

Symbol No.	Parts Location
BL	
BL1002	B-1B
BL1005	B-1B
BL1006	B-2B
C	
C1001	B-2D
C1002	B-1C
C1004	B-1C
C1005	B-2D
C1009	B-2C
C1010	B-2C
C1011	B-1C
C1013	B-1C
C1014	B-1C
C1015	B-1C
C1016	B-1C
C1017	B-1C
C1019	A-2D
C1021	A-2D
C1022	A-2D
C1023	B-1D
C1024	B-1D
C1027	A-2D
C1028	A-2D
C1029	B-2D
C1030	B-2C
C1032	B-2C
C1033	B-2C
C1034	B-2C
C1035	B-2C
C1039	B-2C
C1040	B-1C
C1041	B-2C
C1042	B-2B
C1058	B-1B
C1081	B-1D
C1083	A-2B
C1084	A-2B
C1085	A-1B
C1086	A-2B
C1087	A-1B
C1088	A-1C
C1089	B-1C
C1090	B-1B
C1091	B-1C
C1093	A-2C
C1098	B-1C
CT	
CT1001	B-2B
D	
D1004	A-2D
D1005	B-1D
D1010	B-2C
D1011	B-1B
IC	
IC1001	B-2D
IC1002	B-1C
IC1003	B-2D
IC1004	A-2C
PG	
PG1001	A-1A
Q	
Q1001	B-1D
Q1002	A-1C
Q1007	B-2C
Q1008	A-2D
Q1010	B-1B
R	
R1001	B-2D
R1002	B-2D
R1003	B-2D
R1004	B-1D
R1005	B-1D
R1006	A-1C
R1007	A-1C
R1008	B-1D
R1010	B-2C
R1011	B-1B
R1012	B-2C
R1013	B-2C
R1038	B-2C
R1039	B-2C
R1042	B-2C
R1053	A-2D
R1059	A-1C
R1062	B-1C
R1067	A-1C
R1068	A-1C
R1069	B-1A
R1070	A-1C
R1071	A-1C
R1072	B-1C
R1073	B-1C
R1074	B-1C
R1075	B-1C
R1092	B-2C
R1093	B-2C
R1097	B-1B
R1098	B-1B
R1099	B-1B
R1403	B-1B
TP	
TP1001	B-2B
TP1002	B-2B
TP1003	B-1A
X	
X1001	A-2C

PROCESS P. C. B

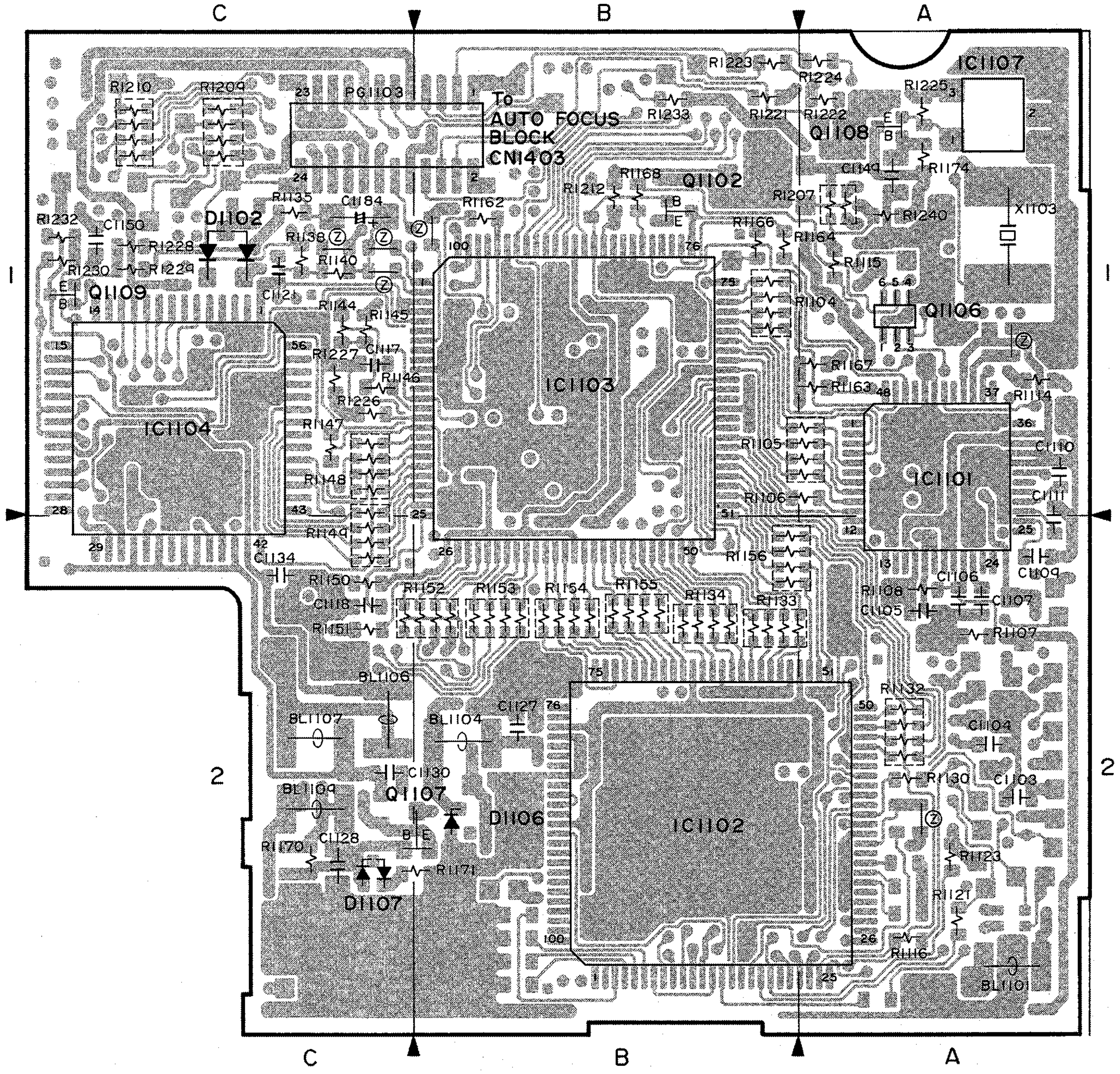
Symbol No.	Parts Location
BL	
BL1101	B-2A
BL1102	A-2A
BL1103	A-2B
BL1104	B-2B
BL1105	A-2B
BL1106	B-2C
BL1107	B-2C
BL1108	A-2B
BL1109	B-2C
C	
C1101	A-2A
C1103	B-2A
C1104	B-2A
C1105	B-2A
C1106	B-2A
C1107	B-2A
C1109	B-2A
C1110	B-1A
C1111	B-2A
C1117	B-1C
C1118	B-2C
C1119	A-1B
C1120	A-1B
C1121	B-1C
C1122	A-1B
C1123	A-2A
C1124	A-1A
C1125	A-2A
C1126	A-2B
C1127	B-2B
C1128	B-2C
C1129	A-2B
C1130	B-2C
C1134	B-2C
C1135	A-1C
C1136	A-1C
C1137	A-2C
C1138	A-1C
C1139	A-1C
C1140	A-1C
C1141	A-1B
C1142	A-1C
C1143	A-1B
C1144	A-1B
C1145	A-1B
C1146	A-1B
C1147	A-1B
C1148	A-2A
C1149	B-1A
C1150	B-1C
C1151	A-2A
C1152	A-1A
C1181	A-2A
C1182	A-2A
C1183	A-2B
C1184	B-1C
C1185	A-2B
C1186	A-2B
C1187	A-2B
C1188	A-2C
C1189	A-2B
C1190	A-2C
C1191	A-2C
C1192	A-2B
C1193	A-2C
C1194	A-2B
C1195	A-2B
C1196	A-2C
CP	
CP1101	A-1C
CP1102	A-1C
D	
D1101	A-1A
D1102	B-1C
D1103	A-1B
D1104	A-1C
D1106	B-2B
D1107	B-2C
IC	
IC1101	B-1A
IC1102	B-2B
IC1103	B-1B
IC1104	B-1C
IC1105	A-1B
IC1106	A-1B
IC1107	B-1A
IC1108	A-1A
IC1110	A-2B
PG	
PG1101	A-2A
PG1102	A-1C
PG1103	B-1C
Q	
Q1101	A-2A
Q1102	B-1B
Q1104	A-1C
Q1105	A-2C
Q1106	B-1A
Q1107	B-2B
Q1108	B-1A
Q1109	B-1C
Q1110	A-1C
R	
R1101	A-2A
R1102	A-1A
R1104	B-1B
R1105	B-1A
R1106	B-1A
R1107	B-2A
R1108	B-2A
R1114	B-1A
R1115	B-1A
R1116	B-2A
R1121	B-2A
R1123	B-2A
R1124	A-1B
R1130	B-2A
R1132	B-2A
R1133	B-2B
R1134	B-2B
R1135	B-1C
R1136	A-1B
R1137	A-1B
R1138	B-1C
R1140	B-1C
R1144	B-1C
R1145	B-1C
R1146	B-1C
R1147	B-1C
R1148	B-1C
R1149	B-2C
R1150	B-2C
R1151	B-2C
R1152	B-2B
R1153	B-2B
R1154	B-2B
R1155	B-2B
R1156	B-2B
R1157	A-2A
R1158	A-2A
R1159	A-2B
R1160	A-2B
R1161	A-2A
R1162	B-1B
R1163	B-1A
R1164	B-1B
R1166	B-1B
R1167	B-1A
R1168	B-1B
R1170	B-2C
R1171	B-2B
R1173	A-1B
R1174	B-1A
R1176	A-1B
R1177	A-1B
R1178	A-2C
R1179	A-2C
R1181	A-2C
R1182	A-2C
R1183	A-2C
R1184	A-1C
R1185	A-1C
R1186	A-1C
R1187	A-2C
R1188	A-2C
R1189	A-2C
R1190	A-1C
R1193	A-1C
R1195	A-1C
R1196	A-1C
R1197	A-1C
R1198	A-1C
R1195	A-1C
R1200	A-1B
R1201	A-1B
R1202	A-1B
R1203	A-1B
R1204	A-1B
R1205	A-1B
R1206	A-1A
R1207	B-1A
R1208	A-1A
R1209	B-1C
R1210	B-1C
R1212	B-1B
R1213	A-1A
R1214	A-1A
R1215	A-2A
R1219	A-1A
R1221	B-1B
R1222	B-1A
R1223	B-1B
R1224	B-1A
R1225	B-1A
R1226	B-1C
R1227	B-1C
R1228	B-1C
R1229	B-1C
R1230	B-1C
R1231	A-1C
R1232	B-1C
R1233	B-1B
R1235	A-2C
R1236	A-1C
R1240	B-1A
R1241	A-1A
TP	
TP1102	A-1C
TP1103	A-1B
X	
X1101	A-1C
X1102	A-1B
X1103	B-1A

PROCESS CIRCUIT BOARD DIAGRAM (PATTERN No. 155084-5)


A
B
C
1
2
IC1105
IC1106
IC1108
IC1110
PG1102
To MAIN PG902
PG1101
To SENSOR PG001
X1101
X1102
TP1102
TP1103
CP1101
CP1102
D1101
D1103
D1104
Q1101
Q1104
Q1105
Q1110
BL1102
BL1103
BL1105
BL1108
C1152
C1124
C1181
C1182
C1183
C1186
C1187
C1191
C1193
C1194
C1195
C1196
R1206
R1219
R1214
R1213
R1241
R1208
R1102
R1101
C1101
R1161
R1158
R1157
C1148
C1129
C1151
C1185
C1192
C1188
C1189
C1190
R1136
R1173
R1198
R1196
R1176
R1137
R1195
R1197
R1190
R1193
C1138
C1139
C1140
C1142
C1120
C1122
C1141
C1143
C1144
C1145
C1146
C1147
C1119
C1125
C1123
C1126
R1124
R1204
R1202
R1177
R1200
R1201
R1203
R1205
R1215
R1159
R1160
R1236
R1231
C1135
C1136
R1186
R1185
R1184
R1182
R1179
R1183
R1178
R1181
R1188
R1187
R1189
R1235
C1137

NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

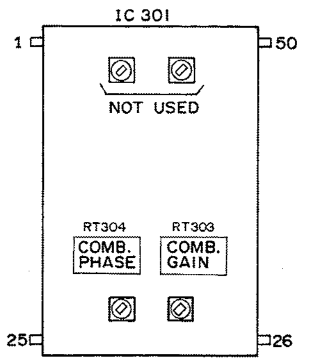
PROCESS P.C.B (SIDE-A)
(PATTERN No.155084 – 5)

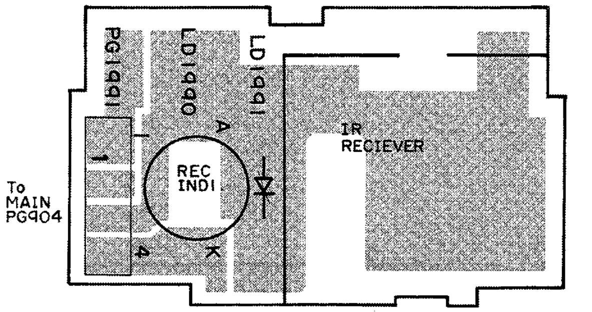

C
B
A
1
2
IC1101
IC1102
IC1103
IC1104
IC1107
PG1103
To AUTO FOCUS BLOCK CN1403
X1103
D1102
D1106
D1107
Q1102
Q1106
Q1107
Q1108
Q1109
BL1101
BL1104
BL1106
BL1107
R1210
R1209
R1232
R1230
C1150
R1228
R1229
R1135
C1184
R1138
R1140
C1121
R1144
R1145
R1227
C1117
R1146
R1226
R1147
R1148
R1149
R1150
C1134
C1118
R1151
R1152
R1153
R1154
R1155
R1134
R1133
R1162
R1212
R1168
R1233
R1223
R1224
R1221
R1222
R1225
R1174
C1149
R1207
R1240
R1166
R1164
R1115
R1104
R1167
R1163
R1114
C1110
C1111
R1105
R1106
R1156
C1109
R1108
C1105
C1106
C1107
R1107
R1132
C1104
R1130
C1103
R1123
R1121
R1116
C1127
C1130
C1128
R1170
R1171

PROCESS P.C.B (SIDE-B)

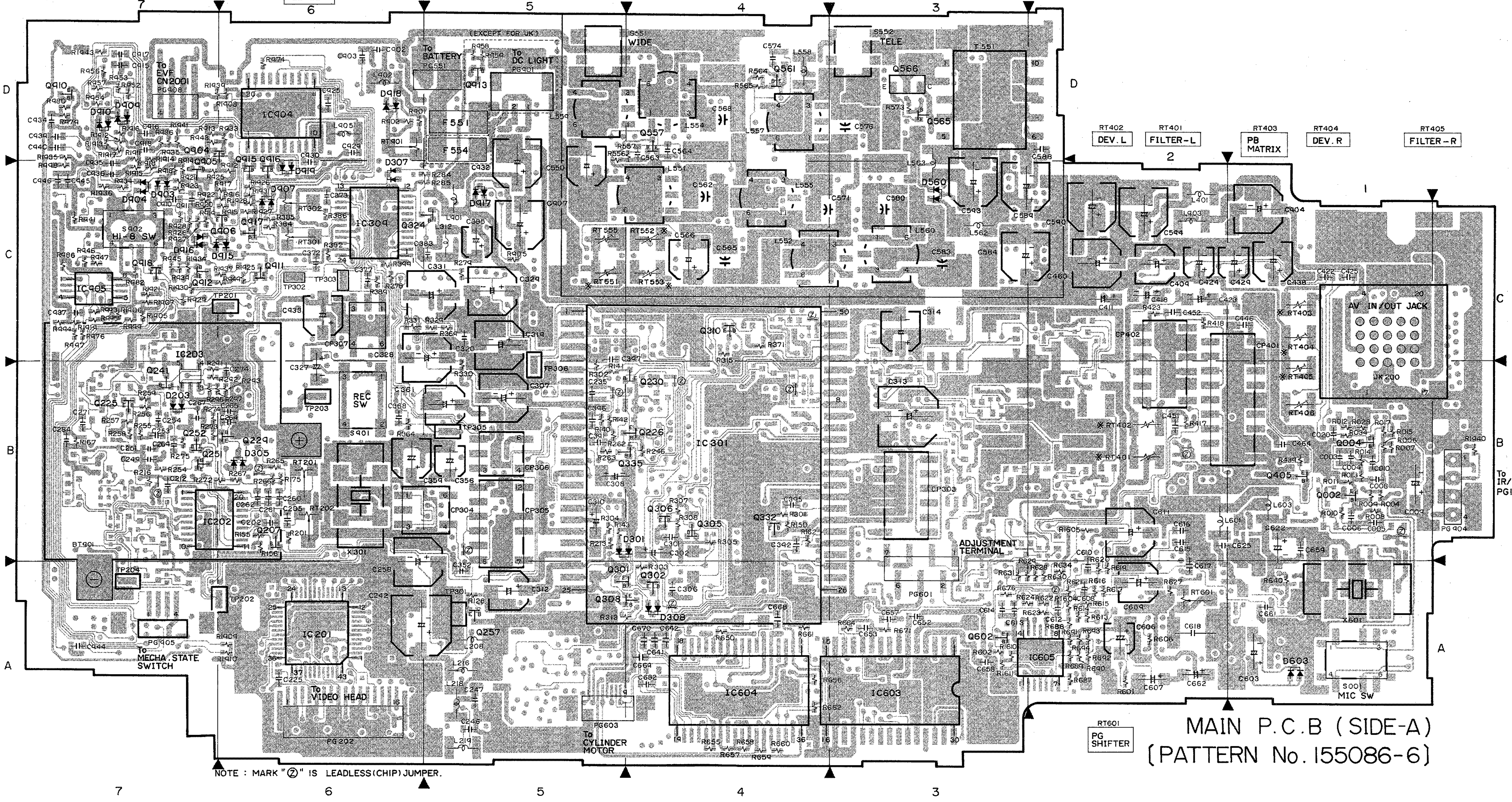
MAIN CIRCUIT BOARD DIAGRAM (SIDE-A) (PATTERN No. 155086-6)

NOTE: SOLDER SEMI-VARIABLE RESISTORS TO THE COMPONENTS MARKED "※" WHEN ADJUSTING THEM.


IC 301
1
50
25
26
NOT USED
RT304
COMB. PHASE
RT303
COMB. GAIN


PG1991
LD1990
LD1991
To MAIN PG904
1
4
A
K
REC INDI
IR RECIEVER

IR/LED P.C.B (SIDE A)


RT201 REC LUMA LEVEL
RT202 REC CHROMA LEVEL
RT901 ODC
RT302 fsc PHASE
RT301 LOCK PHASE
RT551 5V ADJ
RT552 C5V ADJ
RT553 C9V ADJ
RT402 DEV. L
RT401 FILTER-L
RT403 PB MATRIX
RT404 DEV. R
RT405 FILTER-R
RT601 PG SHIFTER
7
6
5
4
3
2
1
D
C
B
A
To EVF CN2001 PG908
To BATTERY PG551
To DC LIGHT PG901
(EXCEPT FOR UK)
S551 WIDE
S552 TELE
T551
IC904
IC309
IC905
IC203
IC202
IC201
IC301
IC604
IC603
IC605
S902 HI-8 SW
S901 REC SW
REC SW
F551
F554
TP201
TP202
TP203
TP204
TP301
TP302
TP303
TP305
TP306
X301
X601
BT901
CP304
CP305
CP306
CP307
CP303
CP401
CP402
PG601
PG202
PG603
PG905
PG904
JK200
AV IN/OUT JACK
ADJUSTMENT TERMINAL
To MECHA. STATE SWITCH
To VIDEO HEAD
To CYLINDER MOTOR
To IR/LED PG1991
S001 MIC SW
D603
Q257
Q602
Q405
Q004
Q002
NOTE : MARK "②" IS LEADLESS (CHIP) JUMPER.

MAIN P.C.B (SIDE-A)
(PATTERN No. 155086-6)

IDENTIFICATION OF PARTS LOCATION

MAIN P. C. B

Symbol No.	Parts Location
BT	
BT901	A-7B
C	
C3	A-1B
C4	A-1B
C5	A-1B
C6	A-1B
C7	B-7B
C8	A-1B
C9	A-1B
C10	A-1B
C11	B-7B
C12	B-7B
C13	B-7B
C14	B-7B
C15	B-7B
C16	B-7B
C17	B-7B
C18	B-7B
C20	A-1B
C21	B-7B
C201	B-1B
C202	A-6B
C203	B-2B
C204	B-1B
C205	A-6B
C206	B-1B
C207	B-1B
C208	B-1B
C209	B-1B
C210	B-1B
C211	B-1B
C212	A-7B
C214	B-1B
C217	B-2B
C218	B-2A
C220	B-2A
C221	B-2A
C222	B-2A
C223	B-2A
C224	B-2A
C225	A-6A
C226	B-2A
C227	B-2A
C228	B-2A
C229	B-2A
C230	B-2A
C232	B-2A
C233	B-2A
C234	B-2A
C235	A-5B
C236	B-2A
C237	B-2A
C238	B-2A
C239	B-2A
C241	B-2A
C242	A-5A
C244	B-3A
C245	B-3A
C246	A-5A
C247	A-5A
C249	A-7B
C251	A-7B
C252	B-1B
C253	A-7B
C254	A-7B
C258	A-5A
C260	A-6B
C261	A-6B
C262	A-6B
C264	A-6B
C265	A-6B
C267	A-7B
C269	A-7B
C271	A-7B
C272	B-1B
C273	B-1B
C274	A-6B
C275	B-1B
C276	B-1B
C277	B-1C
C279	B-3A
C280	B-3A
C282	B-2A
C283	B-3A
C284	A-7B
C290	B-1B
C301	A-4B
C302	A-4B
C304	B-4A
C306	A-4A
C307	A-5B
C308	A-5B
C309	B-3B
C310	A-5B
C312	A-5A
C313	A-3B
C314	A-3C
C315	B-4C
C316	B-3C
C317	B-3C
C318	B-3B
C319	A-5C
C320	A-5C
C322	B-2B
C323	B-2B
C325	B-3B
C326	B-2B
C327	A-6B
C328	A-6C
C329	A-5C
C330	B-2C
C331	A-5C
C332	B-2C
C335	B-2C
C336	B-3C
C337	B-3B
C338	B-3B
C340	B-3B
C342	B-3B
C343	B-3B
C345	B-3B
C346	B-3B
C347	B-3B
C348	B-3A
C349	B-3A
C350	B-3A
C351	B-2A
C352	A-5A
C353	B-2B
C356	A-5B
C358	B-2B
C359	A-6B
C360	B-3B
C361	A-5B
C362	B-2B
C363	B-2B
C364	B-2B
C365	B-2B
C366	B-2B
C367	B-2B
C368	A-6B
C369	B-3B
C371	B-4B
C372	A-6C
C373	A-6C
C374	B-2C
C375	B-2C
C376	B-2C
C377	A-6C
C378	B-2C
C379	B-2C
C380	B-2C
C381	B-2C
C382	B-2C
C383	A-5C
C384	B-2C
C385	A-5C
C386	B-3B
C388	B-4B
C389	B-4C
C390	B-4B
C391	A-5B
C392	A-4B
C395	A-4B
C396	A-5B
C397	A-5B
C401	B-6B
C402	B-6B
C403	B-6B
C405	B-6B
C406	B-6B
C407	B-6C
C408	B-6C
C409	A-2C
C410	B-6C
C411	A-2C
C412	B-6C
C413	B-6C
C414	B-6C
C415	B-6C
C416	B-6C
C417	B-6C
C418	A-2C
C419	B-6C
C420	B-6C
C421	B-6C
C422	A-1C
C423	A-2C
C424	A-2C
C425	A-1C
C426	B-6C
C427	B-6C
C428	B-6C
C429	A-1C
C430	B-7C
C431	B-7C
C432	B-7C
C433	B-7C
C434	B-7C
C435	B-7C
C436	B-7C
C437	B-7C
C438	A-1C
C439	B-7C
C440	B-7B
C441	B-7B
C442	B-7B
C444	B-6B
C445	B-6B
C446	A-1C
C447	B-6B
C448	B-6B
C449	B-6B
C450	B-6B
C451	A-2B
C452	A-2C
C453	B-6B
C455	B-6B
C457	B-7B
C458	B-7B
C459	B-7B
C460	A-2C
C461	B-7B
C462	B-7B
C463	B-6B
C464	A-1B
C465	B-7B
C548	B-4C
C550	A-5C
C551	B-4C
C552	B-4C
C553	B-4C
C554	B-3C
C555	B-3C
C556	B-3C
C557	B-3D
C558	B-4D
C559	B-4D
C560	B-4D
C561	B-3C
C562	A-4C
C563	A-4D
C564	A-4D
C565	A-4C
C566	A-4C
C567	B-3D
C568	A-4D
C569	B-4D
C571	A-4C
C573	B-5C
C574	A-4D
C576	A-3D
C578	B-5C
C579	B-3D
C580	A-3C
C581	B-5C
C582	B-5C
C583	A-3C
C584	A-3C
C585	B-5D
C586	B-5D
C587	B-5D
C588	A-2D
C589	A-2C
C590	A-2C
C591	B-6C
C592	B-5C
C593	A-3C
C594	A-2C
C595	B-5D
C596	B-5D
C597	B-1D
C598	B-4C
C599	B-4C
C603	A-1A
C604	B-6A
C606	A-2A
C607	A-2A
C608	A-2A
C609	A-2A
C610	A-2A
C611	A-2B
C612	A-2A
C613	A-3A
C614	A-3A
C615	A-2B
C616	A-2B
C617	A-2A
C618	A-2A
C622	A-1B
C625	A-2B
C627	B-6B
C628	B-6B
C629	B-6B
C630	B-6B
C631	B-7B
C636	B-4A
C639	B-4A
C640	B-4A
C641	A-4A
C642	A-4A
C643	B-4A
C645	B-4A
C646	B-4A
C647	B-4A
C648	B-4A
C649	B-4A
C650	B-4A
C651	B-5A
C652	A-3A
C653	A-3A
C654	B-5A
C655	B-5A
C656	B-5A
C657	A-3A
C658	A-3A
C659	A-1B
C661	A-1A
C662	A-2A
C664	B-6B
C665	B-7A
C666	B-7A
C668	A-4A
C669	A-4A
C670	A-4A
C673	B-4A
C682	A-4A
C694	B-6A
C695	B-6A
C696	B-6A
C697	B-6A
C902	A-6D
C903	A-6D
C904	A-1C
C905	B-3C
C906	B-2D
C907	A-5C
C908	B-2C
C909	B-2D
C910	A-7C
C911	A-7C
C912	B-2D
C913	B-3C
C914	B-3C
C915	A-7D
C916	A-7D
C917	A-7D
C918	A-7D
C919	B-2D
C921	B-2C
C922	B-1D
C925	A-6D
C929	A-6D
C930	A-6C
C931	B-2D
C932	A-5C
C933	A-6C
C934	A-7D
C935	A-7C
C936	A-7C
C937	A-7C
C939	A-7D
C940	A-7D
C942	B-2D
C944	A-7A
C945	A-7C
C946	A-7C
CP	
CP301	B-4B
CP302	B-4B
CP303	A-3B
CP304	A-6B
CP305	A-5B
CP306	A-5B
CP307	A-6C
CP401	A-1B
CP402	A-2C
D	
D203	A-7B
D204	B-2B
D205	B-1A
D301	A-5B
D302	B-3C
D303	B-2B
D304	B-3A
D305	A-6B
D306	B-2C
D307	A-6C
D308	A-4A
D403	B-7B
D552	B-4C
D553	B-4D
D554	B-4D
D555	B-5C
D556	B-5D
D557	B-5D
D558	B-5D
D559	B-5C
D560	A-3C
D561	B-3D
D562	B-7C
D603	A-1A
D901	B-3D
D902	B-2C
D903	A-7C
D904	A-7C
D907	A-6C
D908	B-3C
D909	A-7D
D910	A-7D
D915	A-7C
D916	A-7C
D917	A-5C
D918	A-6D
D919	A-6C
D920	B-2D
F	
F551	A-5D
F554	A-5D
IC	
IC201	A-6A
IC202	A-7B
IC203	A-7B
IC301	A-4B
IC302	B-4A
IC304	B-3A
IC305	B-3B
IC306	B-2B
IC307	B-3B
IC308	B-2C
IC309	A-6C
IC401	B-6C
IC551	B-3D
IC552	B-4C
IC553	B-5D
IC601	B-6A
IC602	B-7A
IC603	A-3A
IC604	A-4A
IC605	A-2A
IC606	B-6B
IC901	B-1C
IC902	B-2D
IC903	B-3C
IC904	A-6D
IC905	A-7C
JK	
JK200	A-1C
L	
L201	B-2B
L202	B-2B
L203	B-2B
L205	B-1B
L208	A-5A
L212	B-2A
L213	B-2A
L214	B-2A
L215	B-2A
L216	A-5A
L218	A-5A
L219	A-5A
L221	B-1B
L222	B-1B
L224	B-1B
L225	B-1B
L230	B-2B
L232	B-1B
L301	B-3B
L302	B-3A
L303	B-3A
L304	B-4C
L305	B-3B
L306	B-3C
L307	B-3B
L310	B-3B
L311	B-2B
L312	A-5C
L401	A-2C
L551	A-4C
L552	A-4C
L553	B-4C
L554	A-4D
L555	A-4C
L556	B-4C
L557	A-4D
L558	A-4D
L559	A-5D
L560	A-3C
L561	B-5C
L562	A-3C
L563	A-3C
L564	B-4C
L565	B-4C
L566	B-4C
L601	A-2B
L602	B-4A
L603	A-1B
L901	A-5C
L902	A-6D
L903	A-2C
L904	B-3C
L905	A-6D
L906	B-2D
PG	
PG1	B-7A
PG202	A-6A
PG551	A-5D
PG601	A-3A
PG602	B-5A
PG603	A-5A
PG901	A-5D
PG902	B-7C
PG903	B-1B
PG904	A-0B
PG905	A-7A
PG906	B-4A
PG907	B-1A
PG908	A-7D
Q	
Q2	A-1B
Q4	A-1B
Q5	B-7B
Q6	B-7B
Q200	B-7B
Q201	B-1B
Q202	B-1B
Q207	A-6B
Q209	B-1B
Q214	B-2A
Q216	B-2A
Q218	B-2A
Q219	B-2A
Q220	B-2A
Q221	B-2A
Q222	B-3A
Q223	B-3A
Q224	B-3A
Q225	A-7B
Q226	A-4B
Q227	B-4B
Q228	B-4B
Q229	A-6B
Q230	A-4B
Q231	B-1B
Q238	B-1B
Q239	B-1B
Q240	B-1B
Q241	A-7B
Q250	B-3A
Q251	A-7B
Q252	A-7B
Q257	A-5A
Q301	A-5A
Q302	A-4A
Q305	A-4B
Q306	A-4B
Q307	B-3A
Q308	A-4A
Q309	B-4C
Q310	A-4C
Q311	B-3C
Q312	B-2B
Q315	B-3A
Q316	B-2A
Q319	B-2C
Q320	B-2C
Q321	B-2C
Q322	B-2C
Q323	B-3C
Q324	A-5C
Q325	B-2C
Q326	B-2C
Q327	B-2C
Q328	B-2C
Q330	B-2C
Q332	A-4B
Q335	A-4B
Q401	B-6C
Q402	B-6C
Q403	B-6C
Q404	B-6C
Q405	A-1B
Q553	B-4C
Q554	B-4C
Q555	B-3C
Q556	B-3C
Q557	A-4D
Q558	B-4C
Q559	B-4D

IDENTIFICATION OF PARTS LOCATION

MAIN P. C. B

Symbol No.	Parts Location
Q560	B-4D
Q561	A-4D
Q562	B-4D
Q563	B-5C
Q654	B-5C
Q565	A-3D
Q566	A-3D
Q567	B-4C
Q602	A-3A
Q603	B-7A
Q901	B-3D
Q902	B-3C
Q904	A-7D
Q905	A-7C
Q906	A-6C
Q907	B-2C
Q908	B-3C
Q909	B-2C
Q910	A-7D
Q911	A-6C
Q912	A-7C
Q913	A-5D
Q914	B-3D
Q915	A-6C
Q916	A-6C
Q917	A-6C
Q918	A-7C
R	
R4	A-1B
R6	A-1B
R7	A-1B
R8	A-1B
R9	A-1B
R10	A-1B
R11	A-1B
R12	A-1B
R13	A-1B
R14	A-1B
R15	A-1B
R16	B-7B
R17	A-1B
R18	B-7B
R19	B-7B
R20	B-7B
R21	B-7B
R22	B-7B
R23	B-7B
R24	B-7B
R25	B-7B
R26	B-7B
R27	B-7B
R28	A-1B
R34	A-1B
R35	B-7B
R128	A-5A
R129	B-1B
R140	A-5B
R141	A-5B
R142	A-5B

Symbol No.	Parts Location
R143	A-5B
R150	A-4B
R151	B-2B
R155	A-6B
R156	A-6B
R157	B-1B
R161	B-2B
R162	A-4B
R165	B-3C
R166	B-1B
R167	A-7B
R168	B-1B
R174	B-1B
R175	A-6B
R177	B-3A
R181	B-2A
R182	B-3A
R184	B-3A
R185	B-3A
R200	B-7C
R201	A-6B
R209	B-1B
R210	B-1B
R211	B-1B
R212	B-1B
R213	A-5B
R214	B-1A
R216	A-7B
R223	B-2B
R224	B-3C
R229	B-2A
R230	B-2A
R233	B-2A
R234	B-2A
R235	B-2A
R236	B-2A
R237	B-2A
R238	B-2A
R239	B-2A
R240	B-2A
R241	B-2A
R242	B-2A
R243	B-2A
R244	B-2A
R245	B-2A
R246	A-4B
R247	B-2A
R248	B-3A
R249	B-3A
R250	B-3A
R251	B-3A
R252	B-3A
R254	A-7B
R255	A-7B
R256	A-7B
R257	A-7B
R258	A-7B
R259	A-7B
R261	B-1A

Symbol No.	Parts Location
R262	A-5B
R263	A-5B
R264	B-1B
R265	A-6B
R266	A-6B
R267	A-6B
R271	B-2C
R272	A-7B
R273	A-7B
R274	A-7B
R275	A-7B
R278	A-6C
R279	A-5C
R280	B-2C
R281	B-2C
R282	B-3C
R283	D-2C
R284	A-5C
R285	A-5C
R286	B-1B
R287	B-1B
R288	B-1B
R289	B-1B
R290	B-1B
R291	A-7B
R292	A-7B
R293	A-6B
R294	B-1B
R295	B-1B
R296	A-7B
R297	A-7B
R301	A-4B
R302	A-5B
R303	A-4A
R304	A-5B
R305	A-4B
R307	A-4B
R308	A-4B
R309	B-4A
R311	B-4A
R312	B-4A
R313	A-5A
R314	B-3A
R315	A-4C
R316	B-2C
R317	B-3C
R319	B-3C
R322	B-2B
R324	B-2B
R325	B-2B
R326	B-2B
R327	B-2C
R329	A-5C
R330	A-5B
R331	A-6C
R332	B-3C
R333	B-2C
R334	B-2C
R335	B-2C

Symbol No.	Parts Location
R336	B-2C
R340	B-3C
R341	B-3C
R343	B-3B
R345	B-3B
R346	B-3A
R347	B-3A
R348	B-3A
R349	B-3A
R352	B-2A
R353	B-2A
R354	B-2B
R356	B-2B
R357	B-2B
R360	B-2B
R361	B-2B
R362	B-2B
R363	B-2B
R364	A-6B
R366	B-2A
R369	A-5C
R370	B-2C
R371	A-4C
R372	B-2B
R381	B-2C
R382	A-6C
R383	B-2C
R384	A-6C
R385	A-6C
R386	A-6C
R387	B-2C
R388	B-2C
R389	A-6C
R390	B-2C
R391	B-2C
R392	B-2C
R393	B-2C
R394	B-2C
R395	B-2C
R396	B-2C
R397	B-2C
R398	B-2C
R399	A-6C
R401	B-6B
R403	B-6C
R404	B-6C
R405	B-6C
R406	B-6C
R407	B-6C
R408	B-6C
R409	B-6C
R410	B-6C
R411	B-6C
R412	B-7C
R413	B-6C
R414	B-7C
R416	B-7B
R417	A-2B
R418	A-2C

Symbol No.	Parts Location
R419	B-7B
R420	B-6B
R421	B-6B
R422	B-6B
R423	A-2C
R424	B-6B
R425	B-6B
R428	B-7B
R429	B-7B
R432	B-6B
R433	B-6B
R434	B-7B
R435	B-6B
R436	B-6B
R437	B-6C
R438	B-6C
R439	A-1B
R531	B-4C
R532	B-4C
R533	B-4C
R535	B-4C
R536	B-4C
R537	B-4C
R538	B-4C
R539	B-4C
R541	B-4C
R542	B-4C
R543	B-3C
R545	B-4C
R546	B-3C
R547	B-3C
R550	B-3C
R551	B-3C
R553	B-3C
R554	B-3C
R556	A-5C
R557	A-4D
R559	B-4C
R560	B-4D
R561	B-4D
R563	B-4D
R564	A-4D
R565	A-4D
R567	B-4D
R568	B-5C
R569	B-5C
R571	B-5C
R572	B-5D
R573	A-3D
R574	B-5D
R575	B-4C
R576	B-4C
R577	B-5C
R578	B-4C
R579	B-5C
R580	B-5C
R581	B-4D
R582	B-3D
R583	B-4D

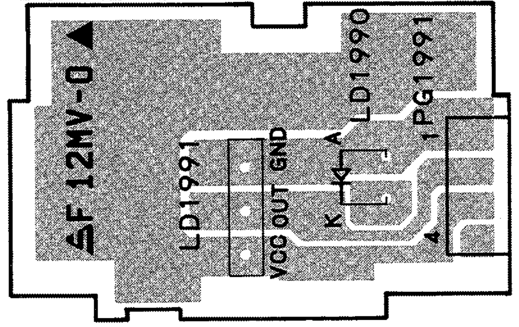
Symbol No.	Parts Location
R584	B-4D
R585	B-4D
R586	B-4C
R587	B-4C
R601	A-2A
R602	A-3A
R604	B-6A
R605	B-6A
R606	A-2A
R607	B-6A
R609	B-6A
R611	B-6A
R612	B-6A
R613	A-2A
R614	A-2A
R615	A-2A
R616	A-2A
R617	A-2A
R619	A-2A
R620	A-2A
R621	A-2A
R622	A-2A
R623	A-2A
R624	A-3A
R626	B-4A
R627	A-2A
R628	A-2A
R629	A-3A
R630	A-2A
R631	A-3A
R634	A-2A
R635	B-6B
R636	B-6B
R637	B-7B
R638	B-4A
R639	B-6B
R640	A-1A
R643	B-7B
R648	B-7B
R650	A-4A
R652	B-4A
R653	B-4A
R654	B-4A
R655	A-4A
R656	A-4A
R657	A-4A
R658	A-4A
R659	A-4A
R660	A-4A
R661	A-4A
R662	A-4A
R663	B-5A
R664	A-3A
R665	B-5A
R666	B-5A
R667	B-4A
R671	A-3A
R672	B-6A
R673	B-6A

Symbol No.	Parts Location
R674	B-6A
R676	A-3A
R678	B-6A
R681	B-7B
R682	B-6A
R687	A-2A
R688	A-2A
R689	A-2A
R690	A-2A
R691	A-2A
R692	A-2A
R693	A-2A
R694	A-2A
R698	B-4A
R699	B-4A
R901	A-6D
R902	A-6D
R903	B-3C
R904	B-2D
R905	A-5C
R906	B-3D
R907	B-3D
R908	B-3C
R909	B-3C
R911	B-2D
R912	A-6C
R913	A-7D
R914	A-7C
R915	A-6C
R916	A-6C
R917	A-7C
R918	A-7C
R919	A-7C
R920	A-7C
R921	A-7C
R922	A-7C
R923	A-7C
R924	B-2D
R925	A-7C
R926	A-7C
R927	A-7C
R928	A-7C
R929	A-7C
R930	B-3C
R931	B-3C
R932	B-2C
R933	A-6D
R934	A-7C
R935	A-7D
R936	A-7D
R937	B-2C
R939	A-7C
R941	A-7C
R943	A-7D
R945	A-7C
R946	A-7C
R947	A-7C
R949	A-6C
R950	B-1D

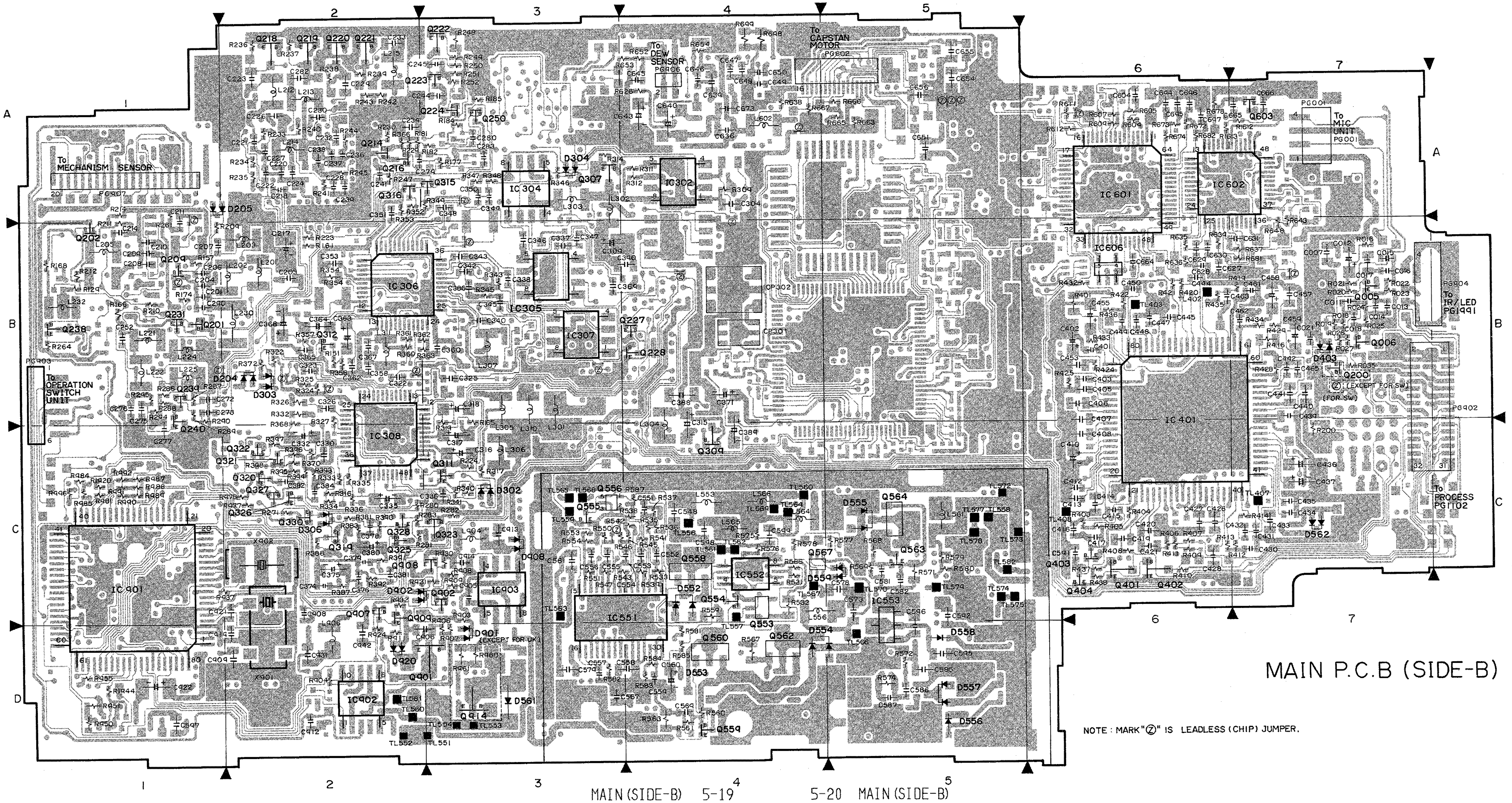
Symbol No.	Parts Location
R951	B-1D
R952	A-7D
R953	A-7D
R954	A-7D
R955	B-1D
R956	A-7D
R957	A-7D
R958	A-5D
R959	A-5D
R960	B-3D
R961	B-3D
R973	B-2C
R974	A-6D
R976	A-7C
R977	B-2C
R978	B-2C
R979	A-7D
R980	A-7D
R981	B-1C
R982	A-7C
R984	B-1C
R985	B-1C
R986	A-7C
R987	B-1C
R988	B-1C
R989	B-1C
R990	B-1C
R991	B-1C
R992	B-1C
R993	A-7C
R994	A-7C
R995	A-7C
R996	B-1C
R997	A-7C
R998	A-7C
R999	A-7C
R1604	A-2A
R1605	A-2B
R1610	A-3A
R1611	A-3A
R1612	B-7A
R1613	B-6A
R1905	A-7C
R1906	A-7C
R1907	A-7C
R1908	A-6D
R1909	A-6A
R1910	A-6A
R1911	A-7D
R1912	A-7D
R1913	A-7D
R1914	A-7D
R1915	A-7C
R1916	A-7D
R1917	A-7D
R1918	A-7C
R1919	A-7C
R1920	B-1C
R1921	A-7C

Symbol No.	Parts Location
R1925	A-6C
R1926	A-6C
R1927	A-6C
R1928	A-6C
R1930	A-7C
R1931	A-6C
R1934	A-7C
R1935	A-7D
R1936	A-7C
R1937	A-6C
R1939	A-7D
R1940	A-0B
R1941	A-7D
R1943	A-7D
R1944	B-1D
RT	
RT201	A-6B
RT202	A-6B
RT301	A-6C
RT302	A-6C
RT401	A-2B
RT402	A-2B
RT403	A-1C
RT404	A-1C
RT405	A-1B
RT406	A-1B
RT551	A-5C
RT552	A-4C
RT553	A-4C
RT555	A-5C
RT601	A-2A
RT901	A-6D
S	
S1	A-1A
S551	A-5D
S552	A-3D
S901	A-6B
S902	A-7C
T	
T551	A-3D
TP	
TP201	A-6C
TP202	A-6A
TP203	A-6B
TP204	A-7A
TP301	A-5A
TP302	A-6C
TP303	A-6C
TP305	A-5B
TP306	A-5B
X	
X301	A-6B
X601	A-1A
X901	B-2D
X902	B-2C

MAIN CIRCUIT BOARD DIAGRAM (SIDE-B)


F 12MV-0
LD1991
LD1990
PG1991
VCC OUT GND
K
A
4
1

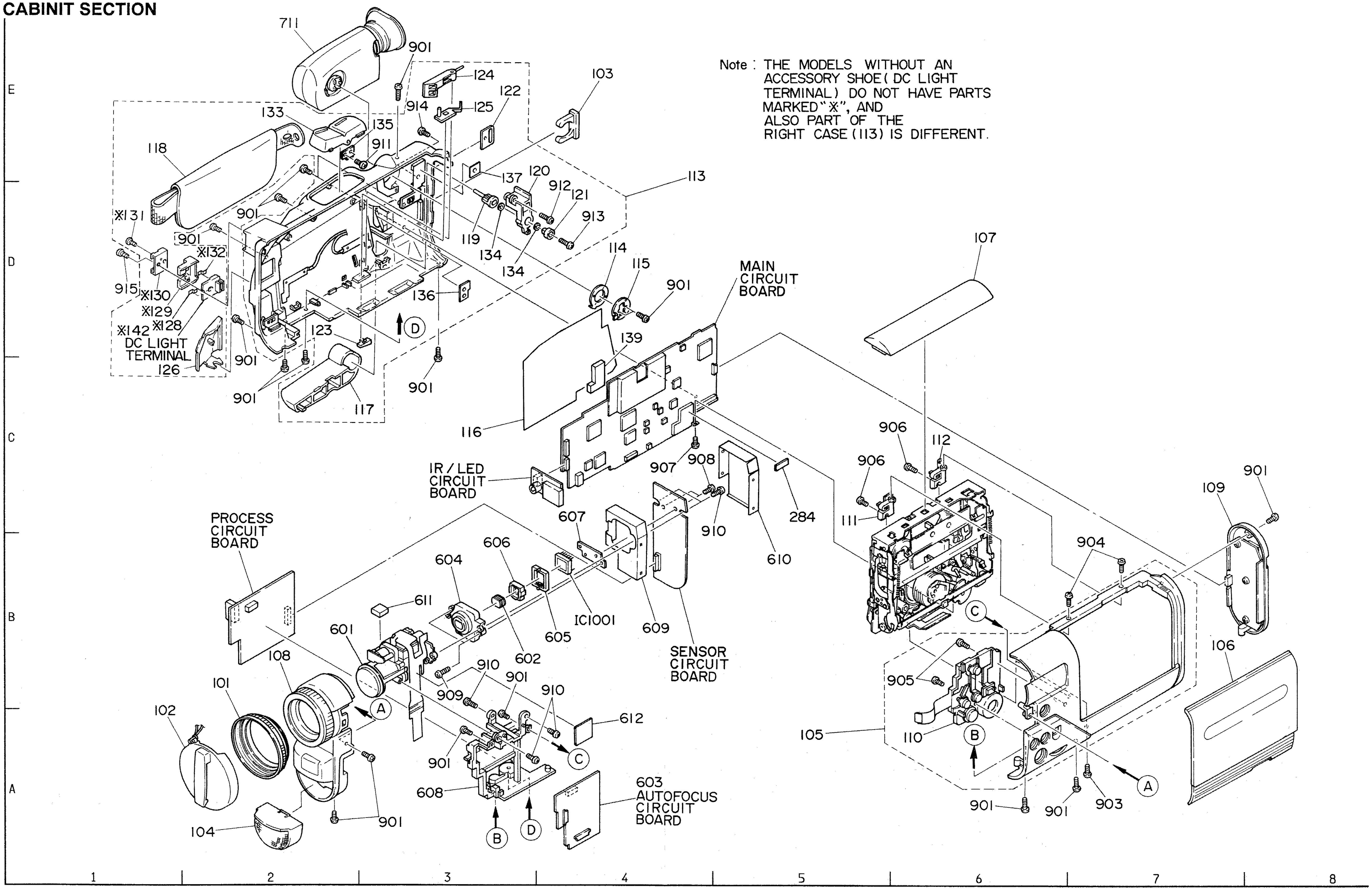
IR / LED P.C.B (SIDE B)


To MECHANISM SENSOR
PG907
To OPERATION SWITCH UNIT
PG903
To DEW SENSOR
PG906
To CAPSTAN MOTOR
PG602
To MIC UNIT
PG001
To IR/LED PG1991
PG904
To PROCESS PG1102
PG902
IC301
IC302
IC304
IC305
IC306
IC307
IC308
IC401
IC402
IC551
IC552
IC553
IC601
IC602
IC606
IC901
IC903
X901
X902
(EXCEPT FOR UK)
(EXCEPT FOR SW)
(FOR SW)
A
B
C
D
1
2
3
4
5
6
7

MAIN P.C.B (SIDE-B)

NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

EXPLODED VIEWS
CABINIT SECTION



Note : THE MODELS WITHOUT AN ACCESSORY SHOE(DC LIGHT TERMINAL) DO NOT HAVE PARTS MARKED"※", AND ALSO PART OF THE RIGHT CASE (113) IS DIFFERENT.

711
901
124
125
122
103
914
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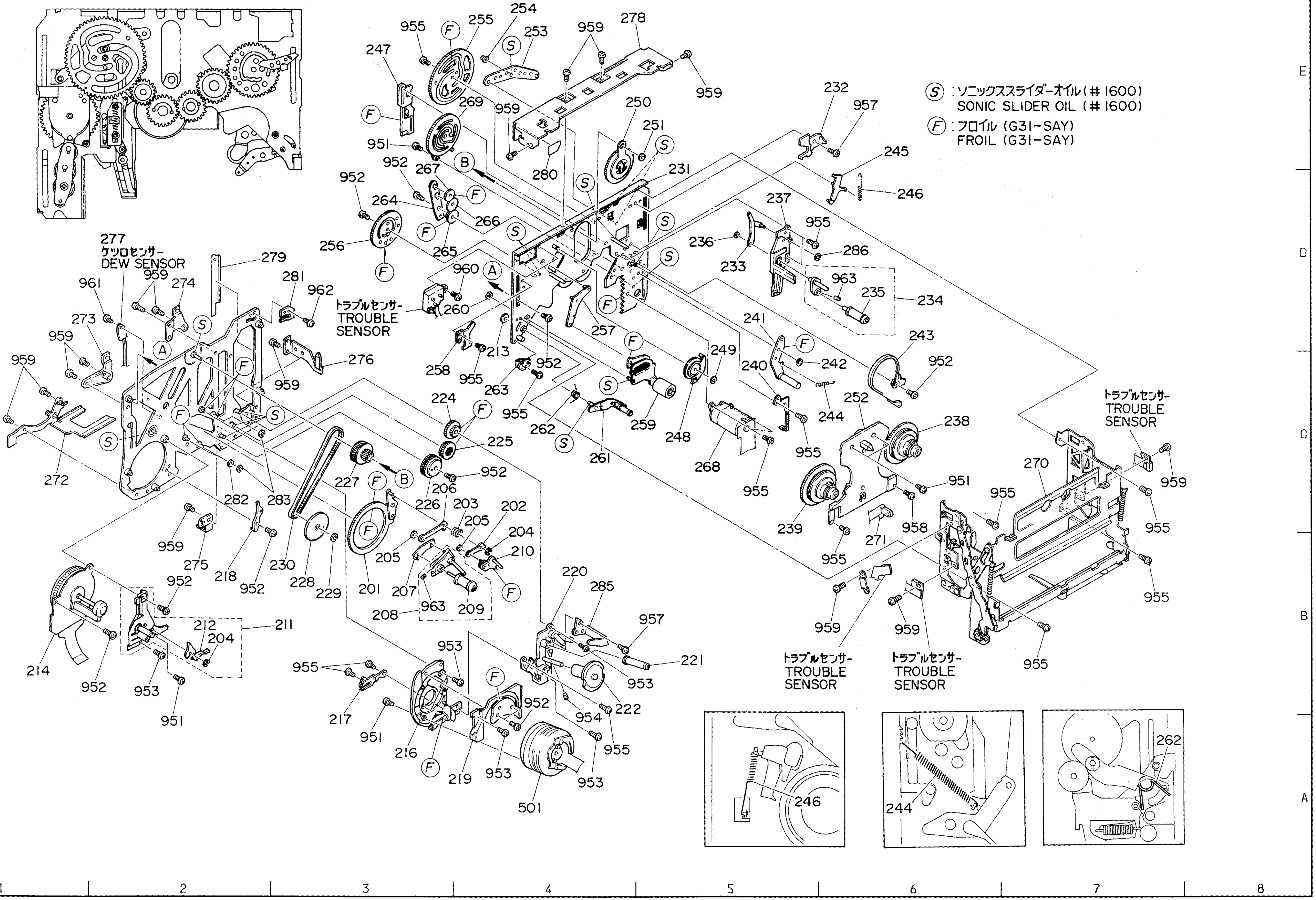
121
113
913
901
※131
901
119
134
134
※132
901
915
※130
※129
※128
※142
DC LIGHT TERMINAL
126
136
D
123
901
901
901
117
114
115
901
107
MAIN CIRCUIT BOARD
139
116
IR / LED CIRCUIT BOARD
907
908
910
284
610
906
112
906
111
901
109
PROCESS CIRCUIT BOARD
607
606
604
611
IC1001
609
605
602
601
SENSOR CIRCUIT BOARD
904
C
105
106
108
101
102
910
901
909
910
A
612
901
C
905
110
B
A
608
603
AUTOFOCUS CIRCUIT BOARD
104
901
B
D
901
901
903
E
D
C
B
A
1
2
3
4
5
6
7
8

CHASSIS SECTION



955
255
254
253
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278
247
269
959
250
251
951
280
952
267
B
231
264
266
265
256
277
ケツロセンサー
DEW SENSOR
279
961
274
281
962
960
A
トラブルセンサー
TROUBLE SENSOR
260
273
276
258
213
263
257
232
957
245
246
237
236
286
233
963
235
234
241
242
240
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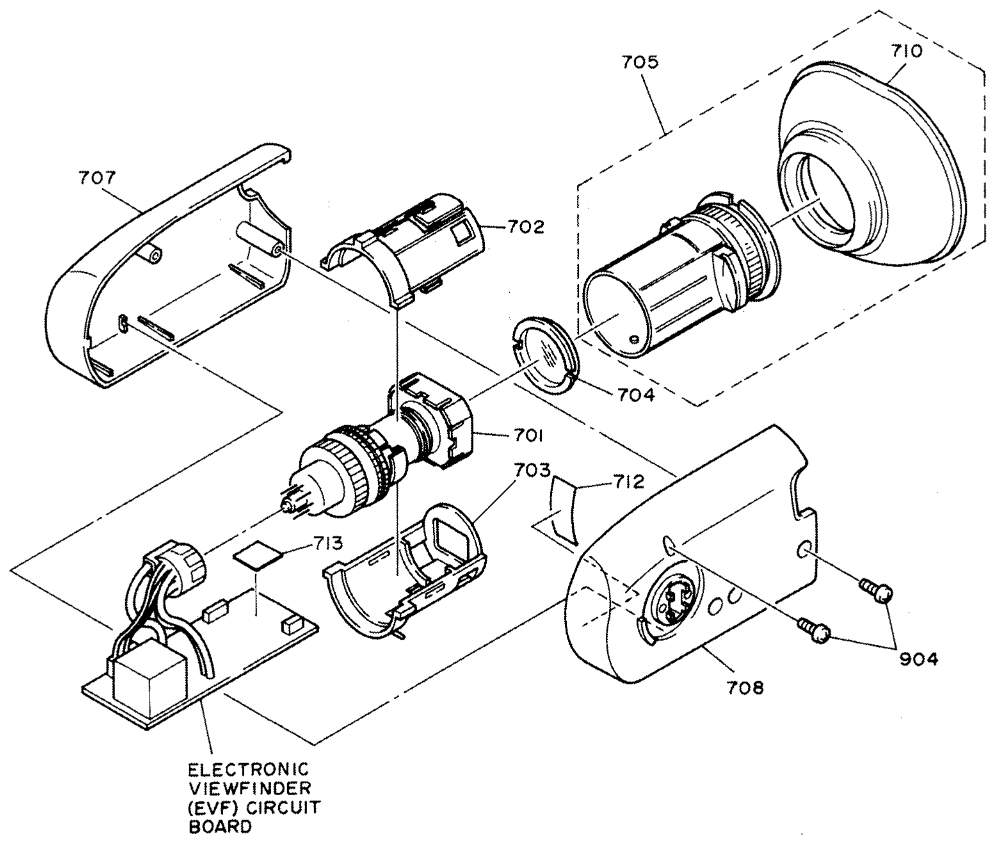
204
210
207
209
208
214
212
211
953
220
285
221
222
954
217
216
219
501
239
958
271
270
1
2
3
4
5
6
7
8
A
B
C
D
E

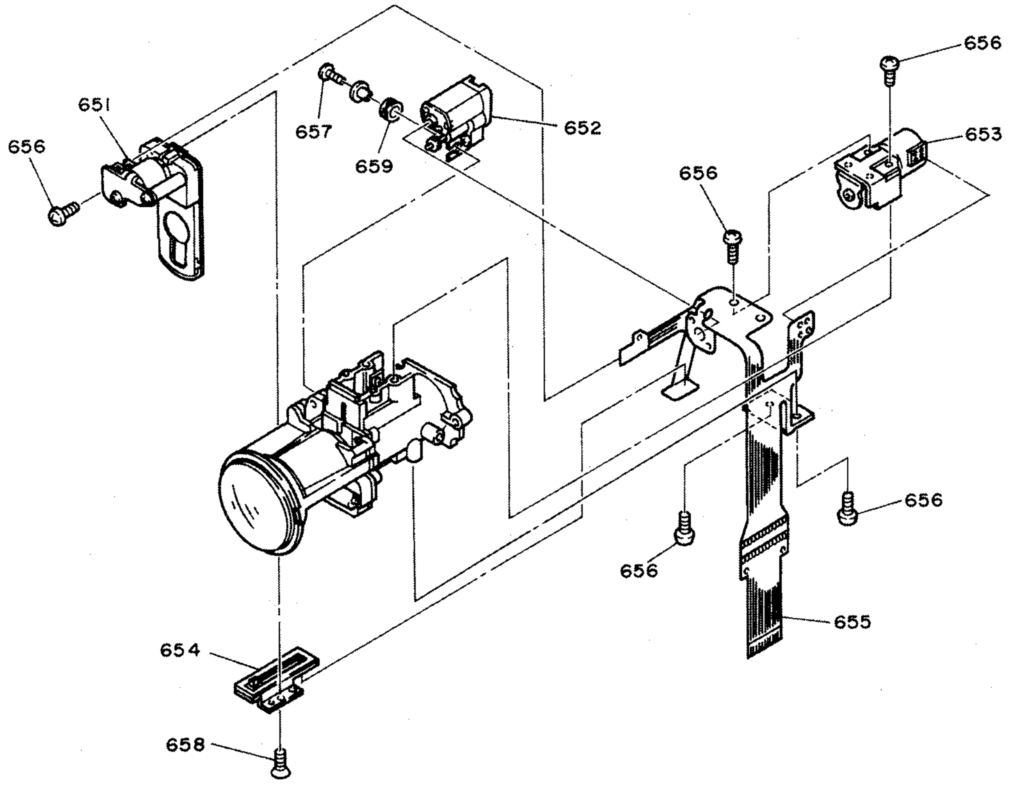
Ⓢ : ソニックススライダーオイル (# 1600)
SONIC SLIDER OIL (# 1600)

Ⓕ : フロイル (G31-SAY)
FROIL (G31-SAY)

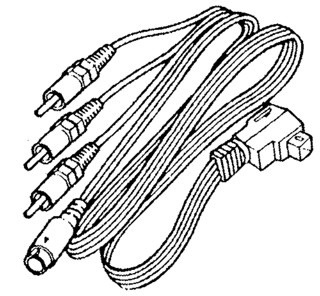
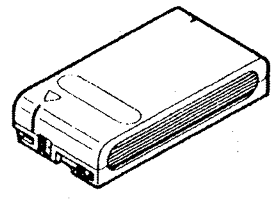
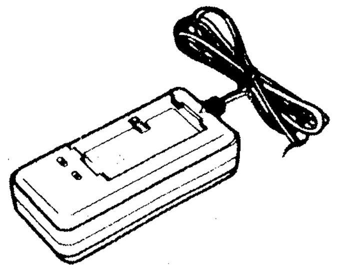
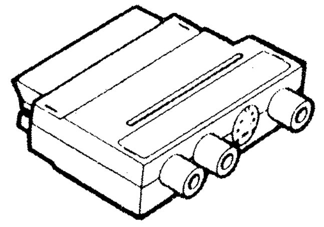
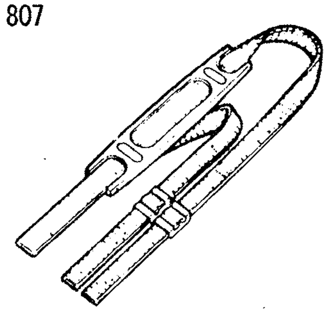
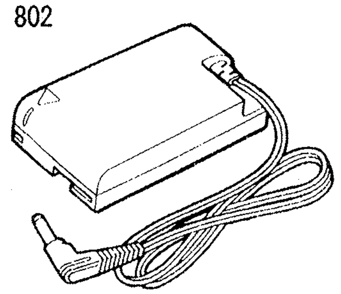
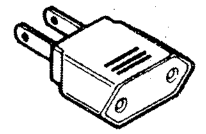
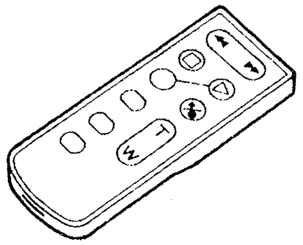
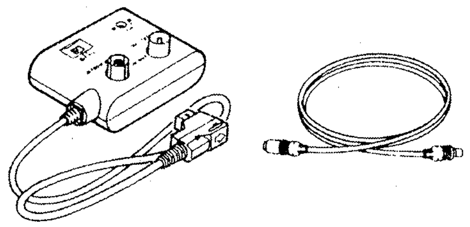
ELECTRONIC VIEWFINDER (EVF) SECTION


705
710
707
702
704
701
703
712
713
904
708
ELECTRONIC VIEWFINDER (EVF) CIRCUIT BOARD

LENS SECTION


656
651
657
659
652
656
653
656
656
656
655
654
658
E
D
C
B
A
1
2
3
4

ACCESSORIES

803 	VM-BP82 	804 
806 (E,UK only) 	807 	802 
	806 (SW only) 	805 
	808: CABLE (AU only) 809: RF CONVERTER (AU only) 	

REPLACEMENT PARTS LIST
VM-H37E (without indication of destination)
MECHANICAL PARTS LIST

MECHANICAL SECTION

SYMBOL-NO	P-NO	DESCRIPTION
101	4798911	FOOD, LENS
102	4798761	CAP, FOOD
103	4798442	CASE, BATTERY
104	5422671	MICROPHONE
105	4716611	CASE SIDE(L)
106	4724243	LID, CASSETTE
107	4724233	COVER, TOP
108	4724212	CASE, FRONT
109	5604732	FUNCTION SW
110	5604761	SWITCH
111	6338361	PIECE
112	6338371	PIECE
113	4715303	CASE, SIDE(R)
114	4899872	SPRING
115	4899881	BRACKET
116	7676772	SHEET
117	4715191	COVER
118	6336744	STRAP, HANDLE
119	4590832	PIECE
120	4590821	PIECE
121	4590842	PIECE
122	4899781	BRACKET
123	4751381	KNOB, EJECT
124	4590761	LEVER, LOCK
125	4590771	LEVER
126	4798431	COVER, JACK
128	4590301	TERMINAL R
129	4714821	COVER, TERMINAL
130	7797471	SHOE
131	7784011	SCREW, 2X6
132	4590291	TERMINAL L
133	4751521	BUTTON T/W
134	4343082	WASHER
201	4585293	LING
202	4585401	ARM, GUIDE
203	6553711	SPRING
204	7406661	E RING
205	7787573	WASHER
206	4585391	ARM
207	4585222	BRACKET
208	4585103	GUIDE BASE
209	4585661	GUIDE ROLLER
210	4585612	BASE, GUIDE
211	4585552	PLATE, GUIDE
212	4585121	PLATE, GUIDE
213	4391201	WASHER
214	5579521	MOTOR, CAPSTAN
216	4585263	BASE, CYLINDER
217	4585486	PLATE, GUIDE
218	45853313	PLATE
219	4585282	PLATE, GUIDE
220	4585255	CATCHER
221	6405624	ROLLER
222	6405572	ROLLER
224	4584321	GEAR
225	6405411	GEAR
226	4584351	GEAR
227	6405401	GEAR
228	6405441	GEAR
229	4391203	WASHER
230	6358261	BELT
231	7139443	SUB CHASSIS
232	4584403	PIN
233	4585161	RINK
234	4584382	BASE
235	4585702	GUIDE ROLLER
236	7787573	WASHER
237	4584731	PLATE, GUIDE
238	6416773	REEL, TABLE
239	6416775	REEL, TABLE
240	4585001	FUCK
241	4584602	ARM TENTION
242	4391201	WASHER
243	4584631	BAND TENTION
244	6553742	SPRING
245	4584411	BRAKE
246	6558461	SPRING
247	4585181	SLIDER
248	4584561	GEAR
249	4391201	WASHER
250	6401522	IDLER
251	4391201	WASHER
252	4584691	PLATE
253	4584311	ARM, CAM
254	4510433	ROLLER, CAM
255	4584151	GEAR, CAM
256	4585142	GEAR
257	4584141	ARM
258	4584521	BRACKET
259	4584423	ARM
260	4391201	WASHER
261	4585731	ARM
262	6553731	SPRING
263	4584531	HOLDER
264	45845113	BRACKET
265	4584292	GEAR
266	4584272	GEAR
267	6405372	GEAR
268	5579531	MOTOR, LOADING
269	5613471	SWITCH
270	4584555	STARGE AS
271	4584992	HOLDER LED
272	4586181	BRACKET
273	4586191	BRACKET
274	4586201	BRACKET
275	4586211	BRACKET
276	4585471	BRACKET
277	0116201	DEW SENSOR
278	4585423	BRACKET
279	4350931	SHEET
280	4391291	SHEET
281	4584283	PLATE
282	4510501	ROLLER
283	4391202	WASHER
284	7675902	CUSHION
285	4586581	ARM
286	7406661	RING
287	4510691	SPACER
501	5436812	CYLINDER ASSY
601	6951551	LENS ZOOM ASSY
602	5170151	FILTER
603	1390653	PWB ASSY HTS9548B
604	6338571	LID, SENSOR
605	6338581	HOLDER
606	6338561	RUBBER
607	4899861	PLATE, SENSOR
608	6186412	FRAME, LENS
609	4843011	CASE, SHIELD

SYMBOL-NO	P-NO	DESCRIPTION
610	4843021	LID, SHIELD
611	4391386	CUSHION
651	6951581	IRIS BLOCK
652	6951582	MOTOR, ZOOM
653	6951583	MOTOR, AUTO FOUCUS
654	6951584	SENSOR
655	6951585	CONNECTOR FLEXIBLE
656	6951586	SCREW
657	6951587	SCREW
658	6951588	SCREW
659	6951589	RUBBER
701	5319061	CRT
711	7054871	EVF ASSY
702	4715251	CASE, CRT (U)
703	4715241	CASE, CRT (B)
704	4715271	COVER
705	4715331	CASE
707	4715221	CASE, EVF (R)
708	4715231	CASE, EVF (L)
710	4798481	CAP, EYE
901	7775945	SCREW (2X5)
903	7784773	SCREW
904	86190033	SCREW 1.7X5
905	8639106	SCREW
906	87111033	PAN HEAD SCREW 2X3
907	8650103	SCREW (2X3)
908	8650103	SCREW (2X3)
909	7775976	SCREW 2X6
910	7775945	SCREW (2X5)
911	7770761	SCREW 2X8
912	86911063	SCREW (2X6)
913	86911103	SCREW (2X10)
914	7775963	SCREW (2X3)
915	8639114	SCREW 2X14
951	8714026	SCREW (1.4X3.5)
952	7775911	SCREW (1.4X1.6)
953	8712024	PAN HEAD SCREW-1.4MM DX3MM
954	7781174	SCREW
955	7775921	SCREW (1.4X2)
957	7775912	SCREW (1.4X1.8)
958	7773611	SCREW (1.7X3B)
959	7775911	SCREW (1.4X1.6)
960	8712024	PAN HEAD SCREW-1.4MM DX3MM
961	7775921	SCREW (1.4X2)
962	7775911	SCREW (1.4X1.6)
963	7781174	SCREW
		ACCESSORIES
802	5861821	CORD
803	5861811	CABLE
804	4134155	ADAPTOR, AC
805	5616271	REMOTE HAND SET
806	4132852	PLUG
807	4131016	STRAP, SHOULDER

SYMBOL-NO	P-NO	DESCRIPTION

VM-H37E (UK)
MECHANICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANICAL SECTION
101	4798912	HOOD, LENS
102	4798761	CAP, FOOD
103	4798442	CASE, BATTERY
104	5422671	MICROPHONE
105	4716611	CASE SIDE(L)
106	4725211	LID, CASSETTE
107	4724233	COVER, TOP
108	4724211	CASE, FRONT
109	5604732	FUNCTION SW
110	5604761	SWITCH
111	6338361	PIECE
112	6338371	PIECE
113	4715309	CASE, SIDE(R)
114	4899872	SPRING
115	4899882	BRACKET
116	7676773	SHEET
117	4715191	COVER
118	6336744	STRAP, HANDLE
119	4590832	PIECE
120	4590821	PIECE
121	4590842	PIECE
122	4899781	BRACKET
123	4751381	KNOB, EJECT
124	4590761	LEVER, LOCK
125	4590771	LEVER
126	4798431	COVER, JACK
133	4751521	BUTTON T/W
134	4343082	WASHER
135	7676823	SPACER
136	7676824	SPACER
201	4585293	LING
202	4585401	ARM, GUIDE
203	6553711	SPRING
204	7406661	E RING
205	7787573	WASHER
206	4585391	ARM
207	4585222	BRACKET
208	4585105	BASE, GUIDE ROLLER
209	6405661	PULLY
210	4585614	BASE, GUIDE ROLLER
211	4585552	PLATE, GUIDE
212	4585121	PLATE, GUIDE
213	4391201	WASHER
214	5579521	MOTOR, CAPSTAN
216	4585263	BASE, CYLINDER
217	4585486	PLATE, GUIDE
218	45853313	PLATE
219	4585282	PLATE, GUIDE
220	4585255	CATCHER
221	6405624	ROLLER
222	6405572	ROLLER
224	4584321	GEAR
225	6405411	GEAR
226	4584351	GEAR
227	6405401	GEAR
228	6405441	GEAR
229	4391203	WASHER
230	6358261	BELT
231	7139443	SUB CHASSIS
232	4584403	PIN
233	4585161	RINK
234	4584382	BASE
235	4585702	GUIDE ROLLER
236	7787573	WASHER
237	4584731	PLATE, GUIDE
238	6416773	REEL, TABLE
239	6416775	REEL, TABLE
240	4585001	FUCK
241	4584602	ARM TENTION
242	4391201	WASHER
243	4584631	BAND TENTION
244	6553742	SPRING
245	4584411	BRAKE
246	6558461	SPRING
247	4585181	SLIDER
248	4584561	GEAR
249	4391201	WASHER
250	6401522	IDLER
251	4391201	WASHER
252	4584691	PLATE
253	4584311	ARM, CAM
254	4510433	ROLLER, CAM
255	4584151	GEAR, CAM
256	4585142	GEAR
257	4584141	ARM
258	4584522	BRACKET
259	4584423	ARM
260	4391201	WASHER
261	4585731	ARM
262	6553731	SPRING
263	4584531	HOLDER
264	45845113	BRACKET
265	4584292	GEAR
266	4584272	GEAR
267	6405372	GEAR
268	5579531	MOTOR, LOADING
269	5613471	SWITCH
270	4584556	HOLDER ASSY, CASSETTE
271	4584992	HOLDER LED
272	4586182	BRACKET
273	4586191	BRACKET
274	4586201	BRACKET
275	4586211	BRACKET
276	4585471	BRACKET
277	0116201	DEW SENSOR
278	4585423	BRACKET
279	4350931	SHEET
280	4391291	SHEET
281	4584283	PLATE
282	4510501	ROLLER
283	4391202	WASHER
284	7675902	CUSHION
285	4586581	ARM
286	7406661	E RING
287	4510691	SPACER
501	5436812	CYLINDER ASSY
601	6951551	LENS ZOOM ASSY
602	5170151	FILTER
603	1390654	PWB ASSY HTS9548C
604	6338572	LID, SENSOR
605	6338582	HOLDER, SENSOR
606	6338561	RUBBER
607	4899861	PLATE, SENSOR
608	6186412	FRAME, LENS
609	4843011	CASE, SHIELD
610	4843021	LID, SHIELD
611	4391511	CUSHION
651	6951581	IRIS BLOCK

SYMBOL-NO	P-NO	DESCRIPTION
652	6951582	MOTOR, ZOOM
653	6951583	MOTOR, AUTO FOUCUS
654	6951584	SENSOR
655	6951585	CONNECTOR FLEXIBLE
656	6951586	SCREW
657	6951587	SCREW
658	6951588	SCREW
659	6951589	RUBBER
701	5319061	CRT
702	4715251	CASE, CRT(U)
703	4715241	CASE, CRT(B)
704	4715272	COVER
705	4715332	CASE, SLIDE
707	4715221	CASE, EVF(R)
708	4715231	CASE, EVF(L)
710	4798482	CAP, EYE
711	7054871	EVF ASSY
901	7775945	SCREW(2X5)
903	7784773	SCREW
904	86190033	SCREW 1.7X5
905	8639106	SCREW
906	87111033	PAN HEAD SCREW 2X3
907	8650103	SCREW (2X3)
908	8650103	SCREW (2X3)
909	7775976	SCREW 2X6
910	7775945	SCREW(2X5)
911	7770761	SCREW 2X8
912	86911063	SCREW (2X6)
913	86911103	SCREW(2X10)
914	7775963	SCREW(2X3)
915	8639114	SCREW 2X14
951	8714026	SCREW (1.4X3.5)
952	7775911	SCREW(1.4X1.6)
953	8712024	PAN HEAD SCREW-1.4MM DX3MM
954	7781174	SCREW
955	7775921	SCREW(1.4X2)
957	7775912	SCREW(1.4X1.8)
958	7773611	SCREW (1.7X3B)
959	7775911	SCREW(1.4X1.6)
960	8712024	PAN HEAD SCREW-1.4MM DX3MM
961	7775921	SCREW(1.4X2)
962	7775911	SCREW(1.4X1.6)
		ACCESSORIES
802	5861821	CORD
803	5861811	CABLE
804	4137281	ADAPTOR, AC
805	5616341	REMOTE HAND SET
806	4132852	PLUG
807	4131016	STRAP, SHOULDER

SYMBOL-NO	P-NO	DESCRIPTION

VM-H37E (SW)
MECHANICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANICAL SECTION
101	4798912	HOOD, LENS
102	4798761	CAP, FOOD
103	4798443	CASE, BATTERY
104	5422671	MICROPHONE
105	4716611	CASE SIDE(L)
106	4725216	LID, CASSETTE
107	4725873	COVER, TOP
108	4724212	CASE, FRONT
110	5604761	SWITCH
111	6338361	PIECE
112	6338371	PIECE
113	4715303	CASE, SIDE(R)
114	4899872	SPRING
115	4899882	BRACKET
116	7676773	SHEET
117	4715191	COVER
118	6336744	STRAP, HANDLE
119	4590832	PIECE
120	4590822	PIECE
121	4590842	PIECE
122	4899781	BRACKET
123	4751381	KNOB, EJECT
124	4590761	LEVER, LOCK
125	4590771	LEVER
126	4798431	COVER, JACK
128	4590301	TERMINAL R
129	4714821	COVER, TERMINAL
130	7797471	SHOE
131	7784011	SCREW, 2X6
132	4590291	TERMINAL L
133	4751521	BUTTON T/W
134	4343082	WASHER
135	7676823	SPACER
136	7676824	SPACER
201	4585295	LINK RING
202	4585401	ARM, GUIDE
203	6553711	SPRING
204	7406661	E RING
205	7787573	WASHER
206	4585392	ARM
207	4585222	BRACKET
208	4585106	BASE, GUIDE
209	4585662	GUIDE ROLLER
210	4585616	BASE, GUIDE ROLLER
211	4585552	PLATE, GUIDE
212	4585121	PLATE, GUIDE
213	4391201	WASHER
214	5579521	MOTOR, CAPSTAN
216	4586731	BASE
217	4585487	PLATE
218	45853313	PLATE
219	4585282	PLATE, GUIDE
220	4585255	CATCHER
221	6405626	PULLEY
222	6405572	ROLLER
224	4584321	GEAR
225	6405411	GEAR
226	4584351	GEAR
227	6405401	GEAR
228	6405441	GEAR
229	4391203	WASHER
230	6358261	BELT
231	7139443	SUB CHASSIS
232	4584403	PIN
233	4585161	RINK
234	4584383	BASE
235	4585702	GUIDE ROLLER
236	7787573	WASHER
237	4584731	PLATE, GUIDE
238	6416775	REEL, TABLE
239	6416773	REEL, TABLE
240	4585001	HOOK
241	4584603	ARM
242	4391201	WASHER
243	4584631	BAND TENTION
244	6553742	SPRING
245	4584411	BRAKE
246	6558461	SPRING
247	4585182	SLIDER
248	4584561	GEAR
249	4391201	WASHER
250	6401522	IDLER
251	4391201	WASHER
252	4584692	PLATE
253	4584311	ARM, CAM
254	4510433	ROLLER, CAM
255	4584152	GEAR
256	4585142	GEAR
257	4584141	ARM
258	4584522	BRACKET
259	4584423	ARM
260	4391201	WASHER
261	4585731	ARM
262	6553731	SPRING
263	4584532	HOLDER
264	45845113	BRACKET
265	4584292	GEAR
266	4584272	GEAR
267	6405372	GEAR
268	5579531	MOTOR, LOADING
269	5613471	SWITCH
270	4586411	STARGE AS
271	4584992	HOLDER LED
272	4586182	BRACKET
273	4586191	BRACKET
274	4586201	BRACKET
275	4586211	BRACKET
276	4585471	BRACKET
277	0116201	DEW SENSOR
278	4585424	BRACKET
279	4350931	SHEET
280	4391291	SHEET
281	4584283	PLATE
282	4510501	ROLLER
283	4391202	WASHER
284	7675902	CUSHION
285	4586581	ARM
286	7406661	E RING
501	5436812	CYLINDER, ASSY
601	6951551	LENS ZOOM ASSY
602	5170151	FILTER
603	1390656	PWB ASSY HTS9548E
604	6338572	LID, SENSOR
605	6338582	HOLDER, SENSOR
606	6338561	RUBBER
607	4899861	PLATE, SENSOR
608	6186412	FRAME, LENS
609	4843011	CASE, SHIELD

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
610	4843022	CAP, SHIELD			
611	4391511	CUSHION			
651	6951581	IRIS BLOCK			
652	6951582	MOTOR, ZOOM			
653	6951583	MOTOR, AUTO FOUCUS			
654	6951584	SENSOR			
655	6951585	CONNECTOR FLEXIBLE			
656	6951586	SCREW			
657	6951587	SCREW			
658	6951588	SCREW			
659	6951589	RUBBER			
701	5319061	CRT			
702	4715251	CASE, CRT(U)			
703	4715241	CASE, CRT(B)			
704	4715273	COVER			
705	4715332	CASE, SLIDE			
707	4715221	CASE, EVF(R)			
708	4715233	CASE, EVF (L)			
710	4798482	CAP, EYE			
711	7054871	EVF ASSY			
901	7775945	SCREW(2X5)			
903	7784773	SCREW			
904	8619003	SCREW 1.7X5			
905	8639106	SCREW			
906	7775963	SCREW(2X3)			
907	8650103	SCREW(2X3)			
908	8650103	SCREW(2X3)			
909	7775976	SCREW 2X6			
910	7775945	SCREW(2X5)			
911	7770761	SCREW 2X8			
912	86911063	SCREW (2X6)			
913	86911103	SCREW(2X10)			
914	7775963	SCREW(2X3)			
915	8639114	SCREW 2X14			
951	8714026	SCREW (1.4X3.5)			
952	7775911	SCREW(1.4X1.6)			
953	8712024	PAN HEAD SCREW-1.4MM DX3MM			
954	7781174	SCREW			
955	7775921	SCREW(1.4X2)			
957	7775912	SCREW(1.4X1.8)			
958	7773611	SCREW (1.7X3B)			
959	7775911	SCREW(1.4X1.6)			
960	8712024	PAN HEAD SCREW-1.4MM DX3MM			
961	7775921	SCREW(1.4X2)			
962	7775911	SCREW(1.4X1.6)			
963	7781174	SCREW			
		ACCESSORIES			
802	5861821	CORD			
803	5861811	CABLE			
804	4134155	ADAPTOR, AC			
805	5616341	REMOTE HAND SET			
806	5699421	SOCKT			
807	4131016	STRAP, SHOULDER			

VM-H37E (AU)
MECHANICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANICAL SECTION
101	4798912	HOOD, LENS
102	4798761	CAP, FOOD
103	4798442	CASE, BATTERY
104	5422671	MICROPHONE
105	4716611	CASE SIDE(L)
106	4725211	LID, CASSETTE
107	4724233	COVER, TOP
108	4724212	CASE, FRONT
110	5604761	SWITCH
111	6338361	PIECE
112	6338371	PIECE
113	4715303	CASE, SIDE(R)
114	4899872	SPRING
115	4899881	BRACKET
116	7676773	SHEET
117	4715191	COVER
118	6336744	STRAP, HANDLE
119	4590832	PIECE
120	4590821	PIECE
121	4590842	PIECE
122	4899781	BRACKET
123	4751381	KNOB, EJECT
124	4590761	LEVER, LOCK
125	4590771	LEVER
126	4798431	COVER, JACK
131	7784011	SCREW, 2X6
133	4751521	BUTTON T/W
134	4343082	WASHER
135	7676823	SPACER
136	7676824	SPACER
201	4585294	LING
202	4585401	ARM, GUIDE
203	6553711	SPRING
204	7406661	E RING
205	7787573	WASHER
206	4585392	ARM
207	4585222	BRACKET
208	4585105	BASE, GUIDE ROLLER
209	4585661	GUIDE ROLLER
210	4585616	BASE, GUIDE ROLLER
211	4585552	PLATE, GUIDE
212	4585121	PLATE, GUIDE
213	4391201	WASHER
214	5579521	MOTOR, CAPSTAN
216	4585263	BASE, CYLINDER
217	4585486	PLATE, GUIDE
218	45853313	PLATE
219	4585282	PLATE, GUIDE
220	4585255	CATCHER
221	6405624	ROLLER
222	6405572	ROLLER
224	4584321	GEAR
225	6405411	GEAR
226	4584351	GEAR
227	6405401	GEAR
228	6405441	GEAR
229	4391203	WASHER
230	6358261	BELT
231	7139443	SUB CHASSIS
232	4584403	PIN
233	4585161	RINK
234	4584383	BASE
235	4585702	GUIDE ROLLER
236	7787573	WASHER
237	4584731	PLATE, GUIDE
238	6416773	REEL, TABLE
239	6416775	REEL, TABLE
240	4585001	FUCK
241	4584602	ARM TENTION
242	4391201	WASHER
243	4584631	BAND TENTION
244	6553742	SPRING
245	4584411	BRAKE
246	6558461	SPRING
247	4585181	SLIDER
248	4584561	GEAR
249	4391201	WASHER
250	6401522	IDLER
251	4391201	WASHER
252	4584692	PLATE
253	4584311	ARM, CAM
254	4510433	ROLLER, CAM
255	4584151	GEAR, CAM
256	4585142	GEAR
257	4584141	ARM
258	4584522	BRACKET
259	4584423	ARM
260	4391201	WASHER
261	4585731	ARM
262	6553731	SPRING
263	4584531	HOLDER
264	45845113	BRACKET
265	4584292	GEAR
266	4584272	GEAR
267	6405372	GEAR
268	5579531	MOTOR, LOADING
269	5613471	SWITCH
270	4584556	HOLDER ASSY, CASSETTE
271	4584992	HOLDER LED
272	4586182	BRACKET
273	4586191	BRACKET
274	4586201	BRACKET
275	4586211	BRACKET
276	4585471	BRACKET
277	0116201	DEW SENSOR
278	4585423	BRACKET
279	4350931	SHEET
280	4391291	SHEET
281	4584283	PLATE
282	4510501	ROLLER
283	4391202	WASHER
284	7675902	CUSHION
285	4586581	ARM
286	7406661	E RING
287	4510691	SPACER
501	5436812	CYLINDER, ASSY
601	6951551	LENS ZOOM ASSY
602	5170151	FILTER
603	1390655	PWB ASSY HTS9548D
604	6338572	LID, SENSOR
605	6338582	HOLDER, SENSOR
606	6338561	RUBBER
607	4899861	PLATE, SENSOR
608	6186412	FRAME, LENS
609	4843011	CASE, SHIELD
610	4843021	LID, SHIELD
611	4391511	CUSHION
651	6951581	IRIS BLOCK

SYMBOL-NO	P-NO	DESCRIPTION
652	6951582	MOTOR, ZOOM
653	6951583	MOTOR, AUTO FOUCUS
654	6951584	SENSOR
655	6951585	CONNECTOR FLEXIBLE
656	6951586	SCREW
657	6951587	SCREW
658	6951588	SCREW
659	6951589	RUBBER
701	5319061	CRT
702	4715251	CASE, CRT(U)
703	4715241	CASE, CRT(B)
704	4715272	COVER
705	4715332	CASE, SLIDE
707	4715221	CASE, EVF(R)
708	4715233	CASE, EVF (L)
710	4798482	CAP, EYE
711	7054871	EVF ASSY
752	4100707	CASE, UPPER
753	4100705	SCREW(2.6X10)
754	5851191	CORD, POWER
755	4100701	SCREW(2X5)
756	4100703	SCREW
901	7775945	SCREW(2X5)
903	7784773	SCREW
904	86190033	SCREW 1.7X5
905	8639106	SCREW
906	87111033	PAN HEAD SCREW 2X3
907	8650103	SCREW (2X3)
908	8650103	SCREW (2X3)
909	7775976	SCREW 2X6
910	7775945	SCREW(2X5)
911	7770761	SCREW 2X8
912	86911063	SCREW (2X6)
913	86911103	SCREW(2X10)
914	7775963	SCREW(2X3)
915	8639114	SCREW 2X14
951	8714026	SCREW (1.4X3.5)
952	7775911	SCREW(1.4X1.6)
953	8712024	PAN HEAD SCREW-1.4MM DX3MM
954	7781174	SCREW
955	7775921	SCREW(1.4X2)
957	7775912	SCREW(1.4X1.8)
958	7773611	SCREW (1.7X3B)
959	7775911	SCREW(1.4X1.6)
960	8712024	PAN HEAD SCREW-1.4MM DX3MM
961	7775921	SCREW(1.4X2)
962	7775911	SCREW(1.4X1.6)
963	7781174	SCREW
		ACCESSORIES
802	5861821	CORD
803	5861811	CABLE
804	4134157	ADAPTOR AC
805	5616341	REMOTE HAND SET
807	4131016	STRAP, SHOULDER
808	5858311	CABLE
809	4131721	CONVERTER RF

VM-H37E/E(UK)/E(SW)/E(AU)
ELECTRICAL PARTS LIST
* Change of electrical parts list.

* If the values of the parts are different in the parts list and schematic diagrams, use the parts shown in the parts list.

VTR SECTION

-CHANGED-

SYMBOL-NO	P-NO	DESCRIPTION
C381	0893133	CERAMIC CHIP 330PF+-5% 50V
R292	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W
R392	0790206	CHIP RESISTOR 820 OHM+-5% 1/16W
R416	0104299	CHIP RESISTOR 8.2KOHM+-0.5% 1/16W
R650	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R698	0104246	CHIP RESISTOR 1.0 OHM+-5% 1/10W
R699	0104246	CHIP RESISTOR 1.0 OHM+-5% 1/10W
R958	0790239	CHIP RESISTOR 270KOHM+-5% 1/16W
IC901	1365744	IC HD6433724A51H
IC903	1352582	IC S-84206F
Q325	1323321	TRANSISTOR 2SD2216
CP1101	5172645	FILTER, BAND PASS
CP1102	5172731	FILTER, LOW PASS
F554	5723233	FUSE, 0.8A

-ADDED-

SYMBOL-NO	P-NO	DESCRIPTION
C388	0202169	CERAMIC CHIP 4.7UF+80-20% 16V
C682	0893202	CERAMIC CHIP 330PF+-10% 50V
R154	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W (SW ONLY)
R1699	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R343	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W (SW ONLY)

-DELETED-

SYMBOL-NO	P-NO	DESCRIPTION
C231	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C642	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C645	0893226	CERAMIC CHIP 0.15UF+80-20% 16V
R144	0790209	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R145	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R146	0790197	CHIP RESISTOR 180 OHM+-5% 1/16W
R148	0790215	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R196	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R197	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R253	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W
R649	0790172	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R683	0790172	CHIP RESISTOR 2.2 OHM+-5% 1/16W
Q331	1323171	TRANSISTOR UN9213
Q304	1323231	TRANSISTOR 2SB1462

CAMERA SECTION

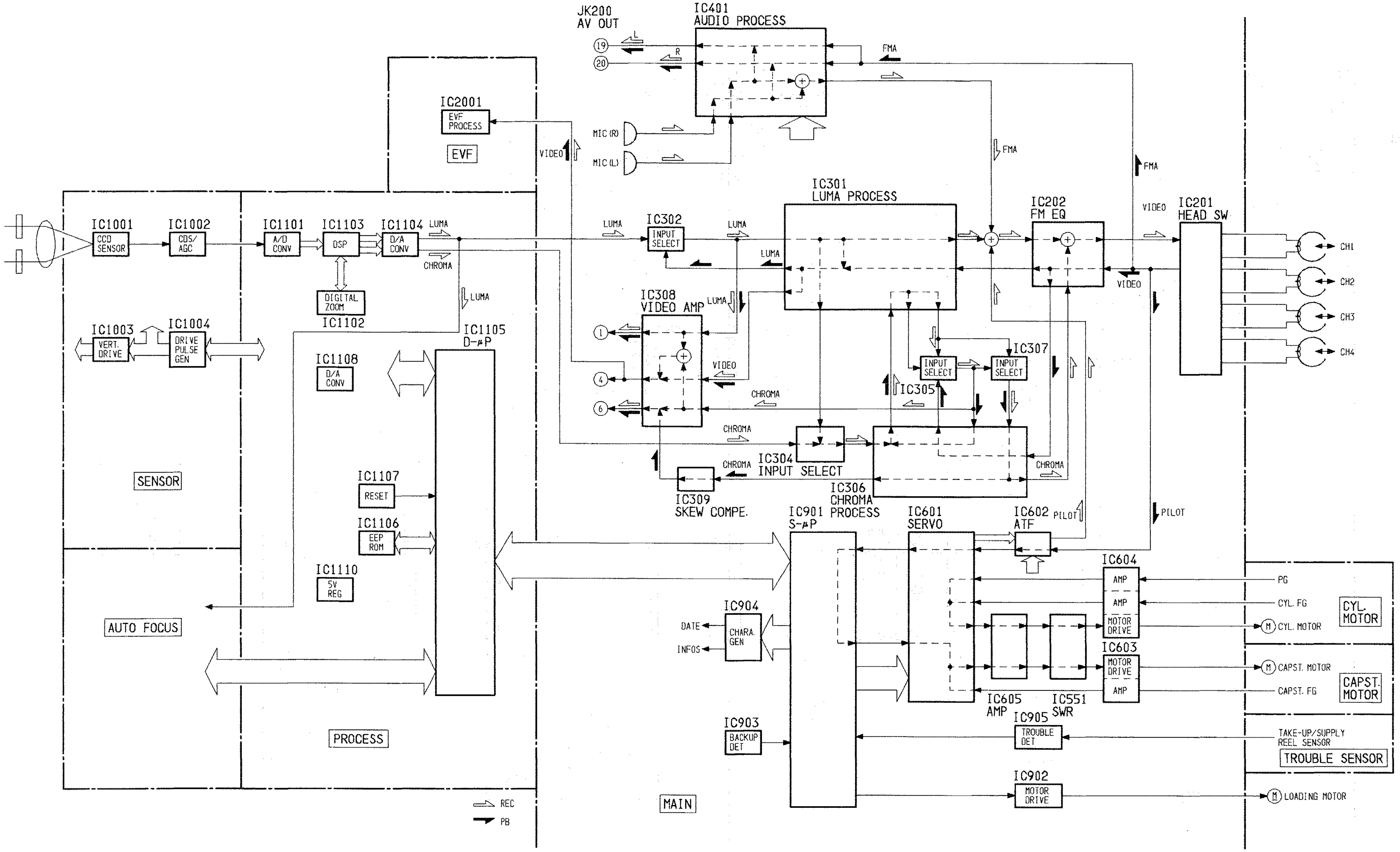
-CHANGED-

SYMBOL-NO	P-NO	DESCRIPTION
C1141	0893204	CERAMIC CHIP 470PF+-10% 50V
C1143	0893227	CERAMIC CHIP 0.22UF+80-20% 16V

CHAPTER 8 GENERAL

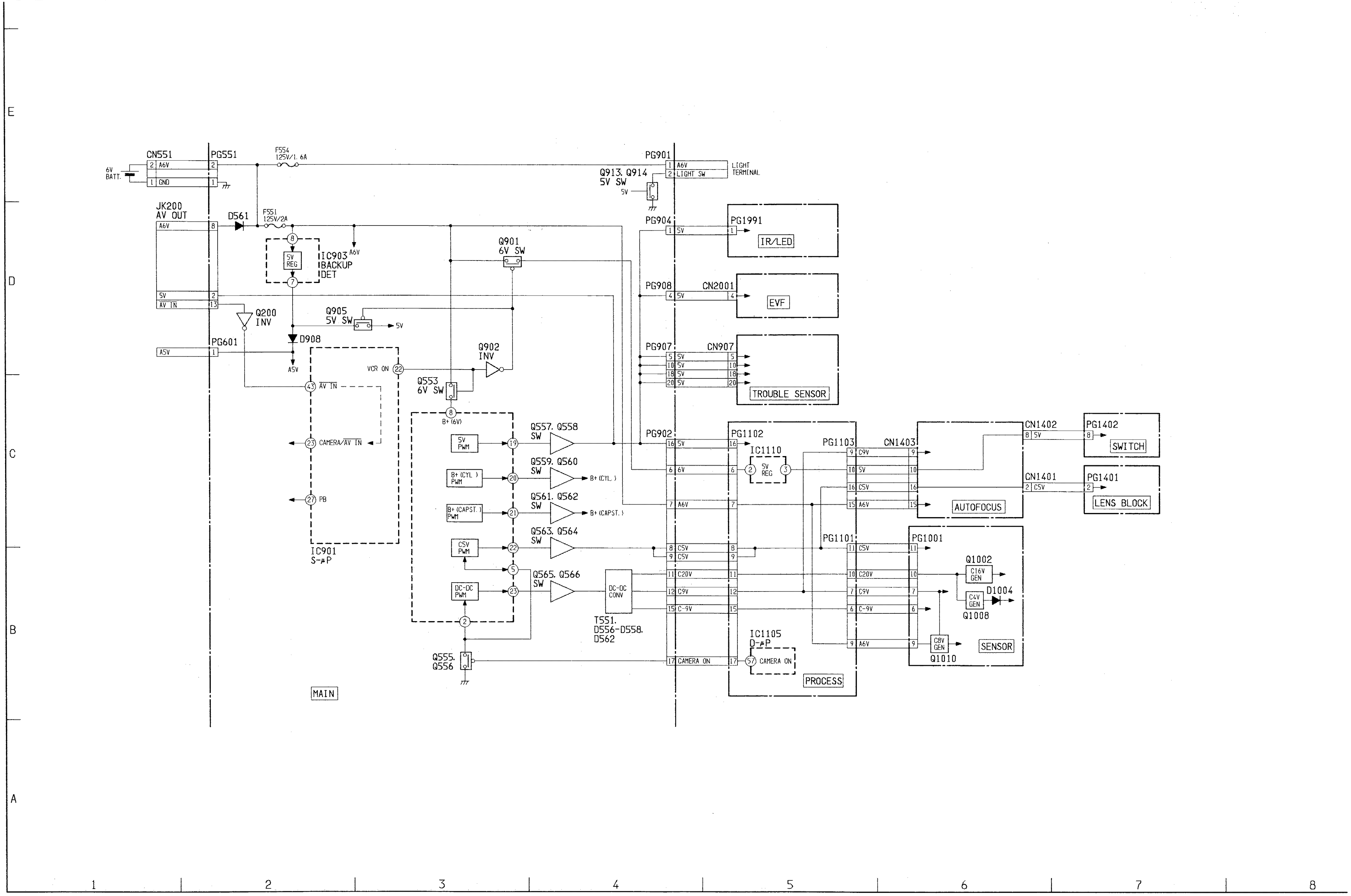
1. BLOCK DIAGRAMS

1-1. OVERALL



JK200
AV OUT
IC401
AUDIO PROCESS
FMA
MIC (R)
MIC (L)
IC2001
EVF PROCESS
EVF
VIDEO
IC1001
CCD SENSOR
IC1002
CDS/AGC
IC1101
A/D CONV
IC1103
DSP
IC1104
D/A CONV
LUMA
CHROMA
DIGITAL ZOOM
IC1102
IC1003
VERT. DRIVE
IC1004
DRIVE PULSE GEN
IC1105
D-μP
IC1108
D/A CONV
IC1107
RESET
IC1106
EEP ROM
IC1110
5V REG
SENSOR
AUTO FOCUS
PROCESS
IC302
INPUT SELECT
IC301
LUMA PROCESS
IC202
FM EQ
IC201
HEAD SW
CH1
CH2
CH3
CH4
IC308
VIDEO AMP
IC305
INPUT SELECT
IC307
INPUT SELECT
IC304
INPUT SELECT
IC309
SKEW COMPE.
IC306
CHROMA PROCESS
IC901
S-μP
IC601
SERVO
IC602
ATF
PILOT
IC604
AMP
MOTOR DRIVE
IC603
IC605
IC551
SWR
IC905
TROUBLE DET
IC904
CHARA. GEN
DATE
INFOS
IC903
BACKUP DET
IC902
MOTOR DRIVE
PG
CYL. FG
CYL. MOTOR
CAPST. MOTOR
CAPST. FG
TAKE-UP/SUPPLY REEL SENSOR
TROUBLE SENSOR
LOADING MOTOR
MAIN
REC
PB

1-2. POWER


E
D
C
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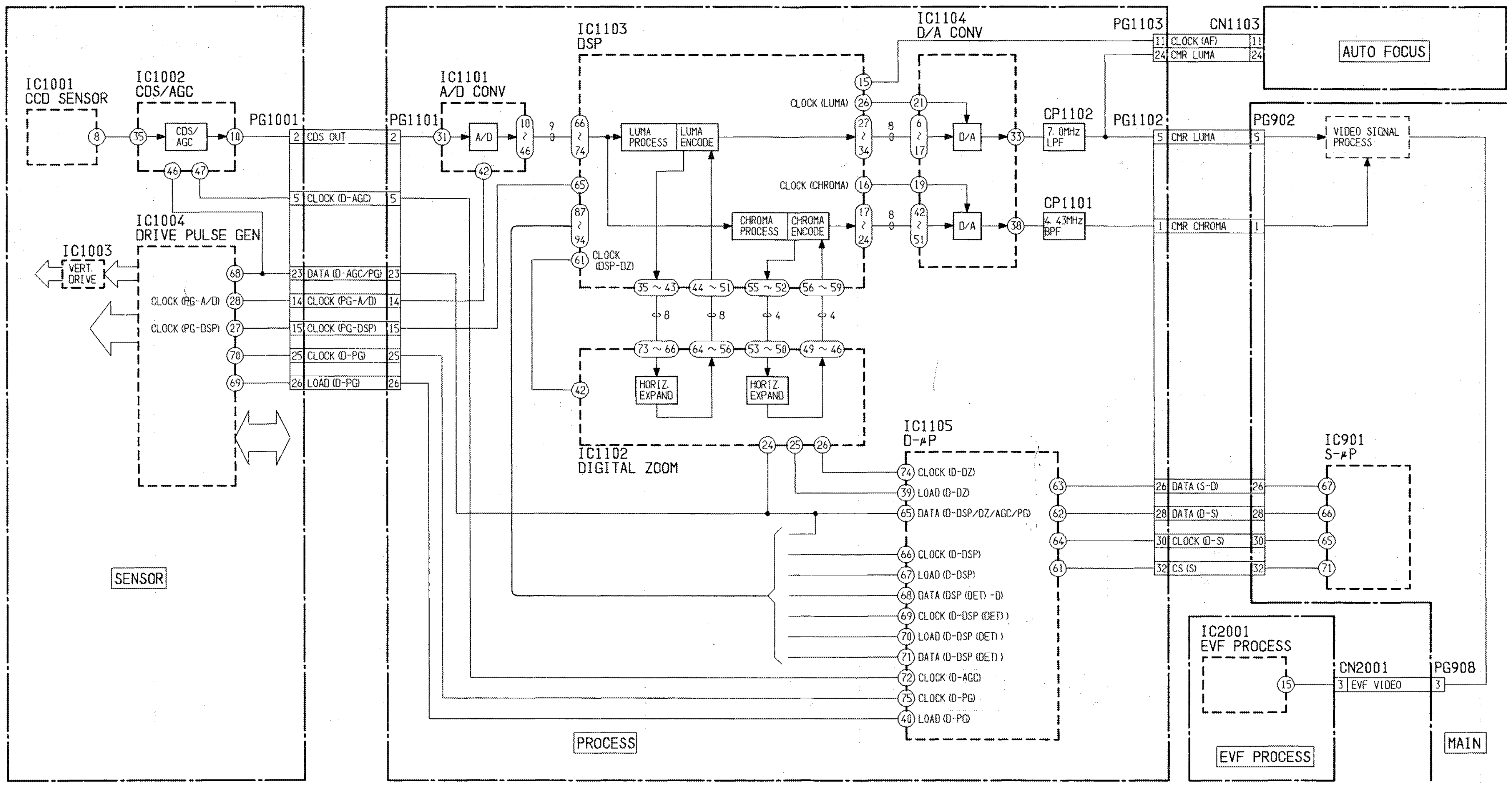
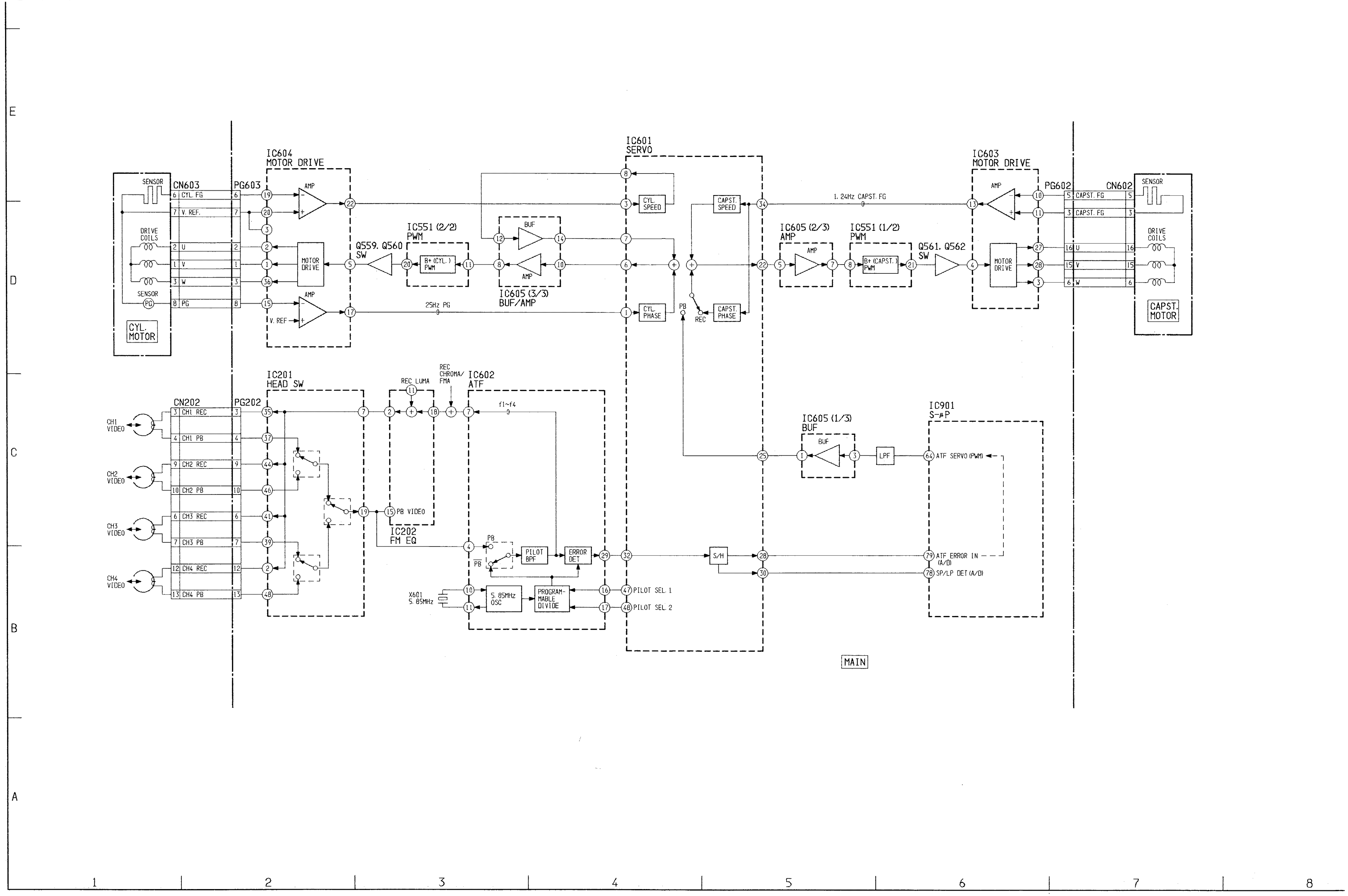
2
3
4
5
6
7
8
CN551
PG551
6V BATT.
A6V
GND
F554 125V/1.6A
PG901
A6V
LIGHT SW
LIGHT TERMINAL
Q913, Q914 5V SW
5V
JK200 AV OUT
A6V
D561
F551 125V/2A
IC903 BACKUP DET
5V REG
A6V
5V
AV IN
Q200 INV
Q901 6V SW
Q905 5V SW
5V
D908
A5V
PG601
A5V
Q902 INV
VCR ON
AV IN
CAMERA/AV IN
PB
IC901 S-µP
Q553 6V SW
B+ (6V)
5V PWM
B+ (CYL) PWM
B+ (CAPST.) PWM
C5V PWM
DC-DC PWM
Q557, Q558 SW
Q559, Q560 SW
B+ (CYL.)
Q561, Q562 SW
B+ (CAPST.)
Q563, Q564 SW
Q565, Q566 SW
DC-DC CONV
T551, D556-D558, D562
Q555, Q556
MAIN
PG904
PG1991
IR/LED
PG908
CN2001
EVF
PG907
CN907
TROUBLE SENSOR
PG902
5V
6V
A6V
C5V
C20V
C9V
C-9V
CAMERA ON
PG1102
IC1110
5V REG
IC1105 D-µP
CAMERA ON
PROCESS
PG1103
CN1403
C9V
5V
C5V
A6V
AUTOFOCUS
CN1402
PG1402
SWITCH
CN1401
PG1401
LENS BLOCK
PG1101
PG1001
Q1002
C16V GEN
C4V GEN
D1004
Q1008
C8V GEN
Q1010
SENSOR

1-3. CAMERA


IC1001
CCD SENSOR
IC1002
CDS/AGC
CDS/AGC
PG1001
CDS OUT
CLOCK (D-AGC)
DATA (D-AGC/PG)
CLOCK (PG-A/D)
CLOCK (PG-DSP)
CLOCK (D-PG)
LOAD (D-PG)
IC1004
DRIVE PULSE GEN
IC1003
VERT.
DRIVE
CLOCK (PG-A/D)
CLOCK (PG-DSP)
SENSOR
PG1101
IC1101
A/D CONV
A/D
IC1103
DSP
LUMA PROCESS
LUMA ENCODE
CHROMA PROCESS
CHROMA ENCODE
CLOCK (LUMA)
CLOCK (CHROMA)
CLOCK (DSP-DZ)
IC1104
D/A CONV
D/A
D/A
CP1102
7.0MHz LPF
CP1101
4.43MHz BPF
PG1103
CN1103
CLOCK (AF)
CMR LUMA
AUTO FOCUS
PG1102
CMR LUMA
CMR CHROMA
PG902
VIDEO SIGNAL PROCESS
HORIZ. EXPAND
HORIZ. EXPAND
IC1102
DIGITAL ZOOM
IC1105
D-µP
CLOCK (D-DZ)
LOAD (D-DZ)
DATA (D-DSP/DZ/AGC/PG)
CLOCK (D-DSP)
LOAD (D-DSP)
DATA (DSP (DET) -D)
CLOCK (D-DSP (DET))
LOAD (D-DSP (DET))
DATA (D-DSP (DET))
CLOCK (D-AGC)
CLOCK (D-PG)
LOAD (D-PG)
PROCESS
DATA (S-D)
DATA (D-S)
CLOCK (D-S)
CS (S)
IC901
S-µP
IC2001
EVF PROCESS
CN2001
EVF VIDEO
PG908
EVF PROCESS
MAIN

1-4. SERVO


E
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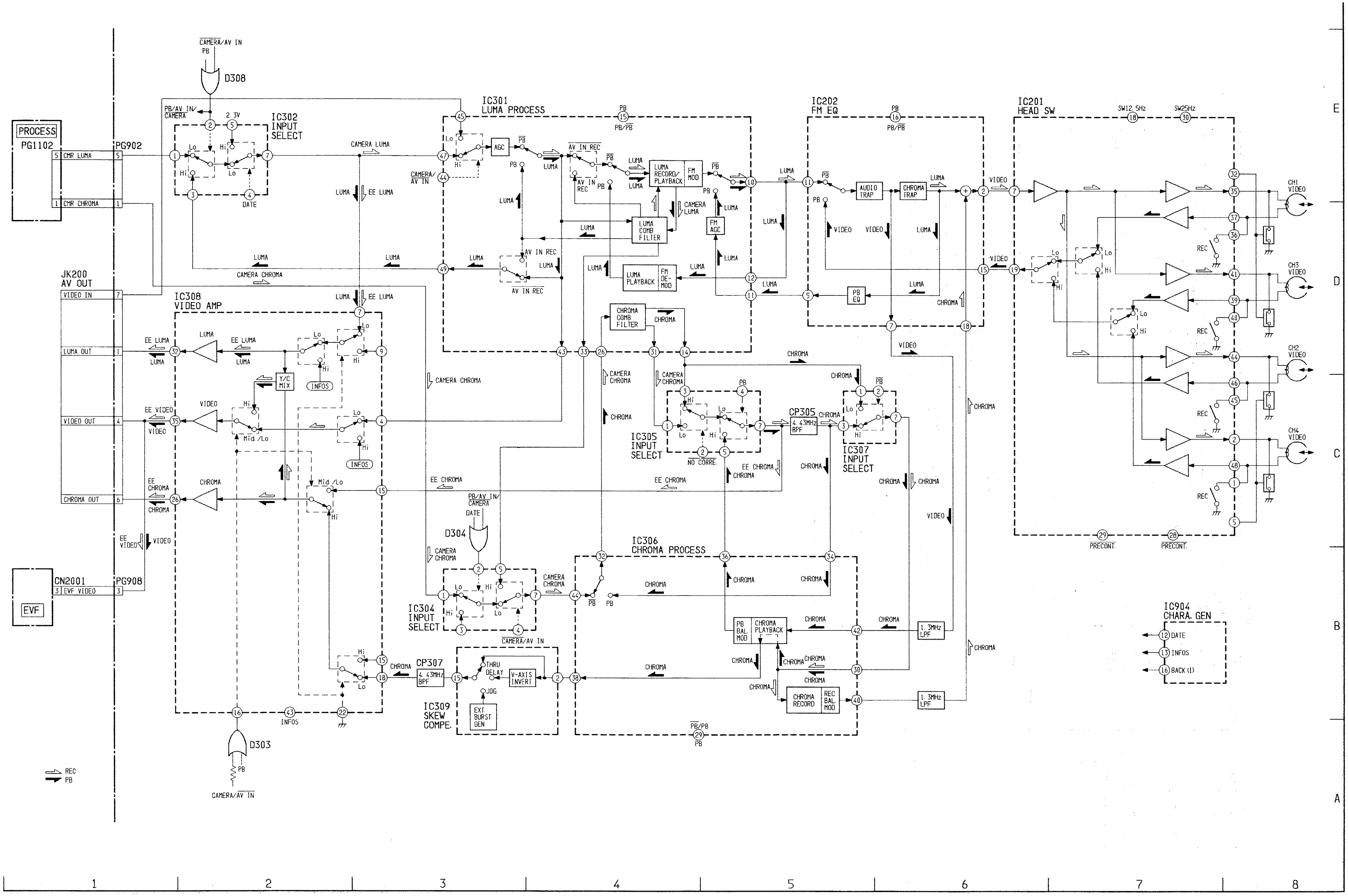
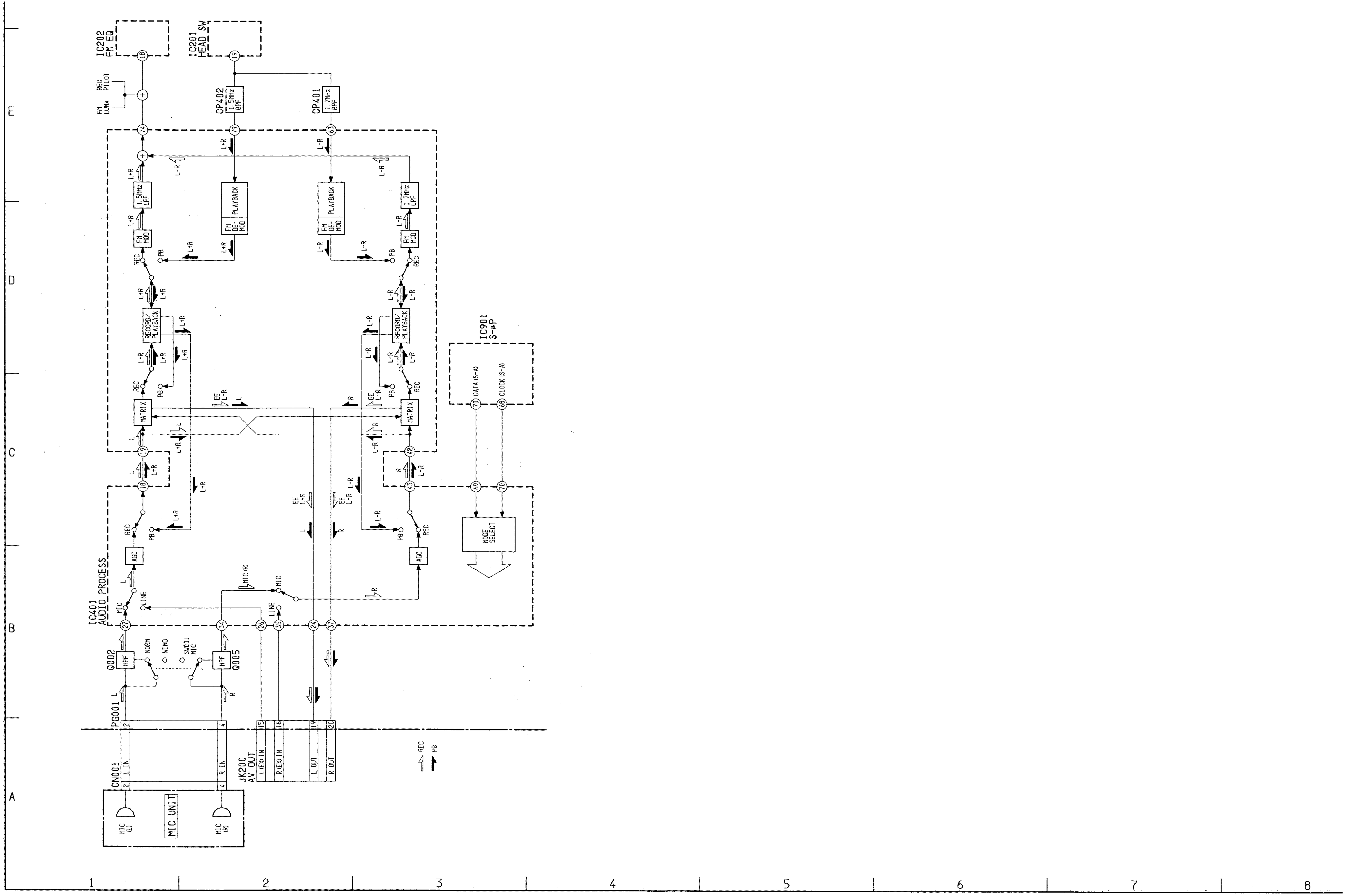
7
8
CYL.
MOTOR
SENSOR
DRIVE
COILS
SENSOR
PG
CN603
6 CYL. FG 6
7 V. REF. 7
2 U 2
1 V 1
3 W 3
8 PG 8
PG603
IC604
MOTOR DRIVE
AMP
MOTOR
DRIVE
AMP
V. REF
Q559. Q560
SW
IC551 (2/2)
PWM
B+ (CYL.)
PWM
BUF
AMP
IC605 (3/3)
BUF/AMP
25Hz PG
IC601
SERVO
CYL.
SPEED
CYL.
PHASE
CAPST.
SPEED
CAPST.
PHASE
PB
REC
1. 24Hz CAPST. FG
IC605 (2/3)
AMP
AMP
IC551 (1/2)
PWM
B+ (CAPST.)
PWM
Q561. Q562
SW
IC603
MOTOR DRIVE
AMP
MOTOR
DRIVE
PG602
CN602
5 CAPST. FG 5
3 CAPST. FG 3
16 U 16
15 V 15
6 W 6
SENSOR
DRIVE
COILS
CAPST.
MOTOR
CN202
PG202
3 CH1 REC 3
4 CH1 PB 4
9 CH2 REC 9
10 CH2 PB 10
6 CH3 REC 6
7 CH3 PB 7
12 CH4 REC 12
13 CH4 PB 13
CH1
VIDEO
CH2
VIDEO
CH3
VIDEO
CH4
VIDEO
IC201
HEAD SW
REC LUMA
REC
CHROMA/
FMA
PB VIDEO
IC202
FM EQ
IC602
ATF
f1~f4
PB
PB
PILOT
BPF
ERROR
DET
X601
5. 85MHz
5. 85MHz
OSC
PROGRAM-
MABLE
DIVIDE
PILOT SEL. 1
PILOT SEL. 2
S/H
IC605 (1/3)
BUF
BUF
LPF
IC901
S-μP
ATF SERVO (PWM)
ATF ERROR IN
(A/D)
SP/LP DET (A/D)
MAIN

1-5. VIDEO


PROCESS
PG1102
PG902
CMR LUMA
CMR CHROMA
CAMERA/AV IN
PB
D308
PB/AV IN/CAMERA
2.3V
IC302
INPUT
SELECT
DATE
CAMERA LUMA
CAMERA CHROMA
IC301
LUMA PROCESS
AGC
AV IN REC
LUMA RECORD/PLAYBACK
FM MOD
LUMA COMB FILTER
FM AGC
LUMA PLAYBACK
FM DE-MOD
CHROMA COMB FILTER
IC202
FM EQ
AUDIO TRAP
CHROMA TRAP
PB EQ
IC201
HEAD SW
SW12.5Hz
SW25Hz
CH1 VIDEO
CH2 VIDEO
CH3 VIDEO
CH4 VIDEO
REC
PRECONT.
JK200
AV OUT
VIDEO IN
LUMA OUT
VIDEO OUT
CHROMA OUT
IC308
VIDEO AMP
EE LUMA
EE VIDEO
EE CHROMA
Y/C MIX
INFOS
Mid/Lo
IC305
INPUT
SELECT
NO CORRE.
CP305
4.43MHz BPF
IC307
INPUT
SELECT
D304
IC304
INPUT
SELECT
IC306
CHROMA PROCESS
PB BAL MOD
CHROMA PLAYBACK
CHROMA RECORD
REC BAL MOD
1.3MHz LPF
PB/PB
CP307
IC309
SKEW COMPE.
THRU DELAY
V-AXIS INVERT
JOG
EXT BURST GEN
D303
CN2001
PG908
EVF VIDEO
EVF
IC904
CHARA. GEN
DATE
INFOS
BACK (I)
REC
PB
1
2
3
4
5
6
7
8
A
B
C
D
E

1-6. AUDIO


IC202 FM EQ
IC201 HEAD SW
REC PILOT
FM LUMA
CP402 1.5MHz BPF
CP401 1.7MHz BPF
1.5MHz LPF
1.7MHz LPF
FM MOD
FM DE-MOD
PLAYBACK
RECORD/PLAYBACK
MATRIX
L+R
L-R
REC
PB
EE
IC901 S-μP
DATA (S-A)
CLOCK (S-A)
MODE SELECT
AGC
IC401 AUDIO PROCESS
MIC
LINE
MIC (R)
Q002 HPF
Q005 HPF
NORM
WIND
SW001 MIC
PG001
CN001
L IN
R IN
JK200 AV OUT
L (EX) IN
R (EX) IN
L OUT
R OUT
MIC UNIT
MIC (L)
MIC (R)
REC
PB
A
B
C
D
E
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2
3
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8

2. PIN FUNCTIONS OF MICROPROCESSORS

2-1. Digital Microprocessor (IC1105: D-μP)

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	Lo	RESET(Lo)	Intializes IC1105.
2	O	(Pulse)	OSC OUT	Generate 16MHz clock pulse by a crystal oscillator (X1103: 16MHz).
3	I	(Pulse)	OSC IN	
4	-	-	-	Not used. Connected to 5V.
5	-	-	-	
6	-	-	B + (5V)	Connected to 5V.
7	I	Lo	STANDBY(Lo)	Not used. Connected to 5V.
8	-	-	B + (5V)	Connected to 5V.
9	-	-	-	Not used. Open.
10	I	(Pulse)	DATA(RX)	Communicate with personal computer for initial setting and adjustments.
11	O	(Pulse)	DATA(TX)	
12	-	-	GND	Grounded.
13	I	Lo	TELE SW(Lo)	Zoom switches inputs.
14	I	Lo	WIDE SW(Lo)	
15	O	Hi	ZOOM(TELE)	Zoom motor drive outputs. However in this mode, these output are not used. Open.
16	O	Hi	ZOOM(WIDE)	
17	I	0V - 5V	f(A/D)	Detects the f-value (distance to object) detected by the digital autofocus control circuit.
18	I	(Pulse)	AE TIMING	Detects the timing for programmed AE operation.
19	I	(Pulse)	AREA1	Input pulses for detecting the iris control area data from the digital signal processing circuit (IC1103: DSP).
20	I	(Pulse)	AREA2	
28	I	(Pulse)	FV	
21	I	(Pulse)	CHD	Input the horizontal sync pulses from IC1103.
42	I	(Pulse)	CHD	
22	O	(Pulse)	SHUT.4	Controls the shutter speed. Supplies to the drive pulse generator (IC1004: DRIVE PULSE GEN) to set the shutter speed in the programmed AE mode.
23	I	Hi/Lo	READY/BUSY(Lo)	Communicate with the EEPROM (IC1106).
24	O	Lo	CS(Lo(D-ROM))	
25	O	(Pulse)	CLOCK(D-ROM)	
26	I	(Pulse)	DATA(ROM-D)	
27	O	(Pulse)	DATA(D-ROM)	
29	-	-	B + (A/D)	Connected to 5V.
30	I	0V - 5V	ZOOM(A/D)	Inputs the zoom position detected by the digital autofocus control circuit.
31	I	0V - 5V	F.DET(A/D)	Inputs the F-value detection signal detected by the digital autofocus control circuit, compares it and the reference voltage memorized in IC1106 and detects the F-value.
32	I	0V- 5V	MOVE(VERT. (A/D))	Not used. Open.
33	I	0V - 5V	MOVE(HORIZ. (A/D))	
34	I	0V - 5V	CMR KEY(A/D)	Detects the operation switches, DIGITAL ZOOM, D.FILTER, FADE and FOCUS.
35	I	Hi	BACKLIGHT SW	Detects the backlight switch (3.3V input) and opens the iris more.
36	-	-	ADJ.0	Connected to pin 32.
37	-	-	ADJ.1	Connected to pin 33.
38	-	-	GND(A)	Grounded.
39	O	Hi	LOAD(D-DZ)	Ouptut the clock and load pulses to transfer data to the digital zoom circuit (IC1102: DIGITAL ZOOM).
74	O	(Pulse)	CLOCK(D-DZ)	
40	O	Hi	LOAD(D-PG)	Output the clock and load pulses to IC1004.
75	O	(Pulse)	CLOCK(D-PG)	
41	I	Lo	Hi-8(Lo)	Sets internal mode (Hi-8/normal). Grounded.
43	O	(Pulse)	CINEMA ON	Supplies to IC1103 and controls the wipe fade.
44	I	Lo	PAL(Lo)	Sets internal mode (PAL/NTSC). Grounded.
45	O	(Pulse)	IRIS DRIVE(PWM)	Drives the iris motor.

Pin No.	I/O	Active Level	Abbreviation	Function
46	O	(Pulse)	KNEE	Not used. Open.
47	-	-	B + (5V)	Connected to 5V.
48	I	Hi	DIGITAL ZOOM	Sets internal mode (with/without the digital zoom function). Open.
49	I	Hi	TITLE SUPER	Not used. Open.
50	O	Hi	POWER ON(TITLE)	
51	O	Hi	BEFORE(TITLE)	
52	O	Hi	NEXT(TITLE)	
53	O	Hi	TITLE ON/OFF	
54	I	Lo	RESET(Lo(D))	
55	O	Hi	5V POWER(TITLE)	
56	-	-	GND	Grounded.
57	O	Hi	CAMERA ON	Turns the DC-to-DC converter on during camera recording.
58	-	-	-	Not used. Open.
59	O	Hi	LOAD(D-D/A)	Outputs the clock and load pulses to transfer data to the digital-to-anlogue converter (IC1108: D/A CONV).
60	O	(Pulse)	CLOCK(D-D/A)	
61	O	Hi	CS(S)	Communicate with the system control microprocessor (IC901: S-μP).
63	I	(Pulse)	DATA(S-D)	
64	O	(Pulse)	CLOCK(D-S)	
62	O	(Pulse)	DATA(D-S/D/A)	Serial data output transferred to IC901 and IC1108.
65	O	(Pulse)	DATA(D-DSP/DZ/AGC/PG)	Serial data output transferred to IC1103, IC1102, IC1002 and IC1004.
66	O	(Pulse)	CLOCK(D-DSP)	Outputs the clock and load pulses to transfer data to IC1103.
67	O	(Pulse)	LOAD(D-DSP)	
68	I	(Pulse)	DATA(DSP(DET)-D)	Input detected data of the auto iris and white balance control circuits in IC1103.
69	O	(Pulse)	CLOCK(D-DSP (DET))	
70	O	(Pulse)	LOAD(D-DSP (DET))	
71	O	(Pulse)	DATA(D-DSP (DET))	Outputs state data for detetcing the auto iris and white balance.
72	O	(Pulse)	CLOCK(D-AGC)	Outputs the clock pulse to transfer data to IC1002.
73	-	-	GND	Grounded.
76	-	-	-	Not used. Open.
77	O	Lo	RESET(Lo(AF))	Initializes the digital autofocus copntrol circuit.
78	O	(Pulse)	DATA(D-AF)	Communicate with the digital autofocus control circuit.
79	I	(Pulse)	DATA(AF-D)	
80	O	(Pulse)	CLOCK(D-AF)	

2-2. System Control Microprocessor (IC901: S-μP)

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	(Pulse)	FWD END	Detects the tape end during playback, recording, fast forward and forward search.
2	I	(Pulse)	REW END	Detects the tape end during rewind and reverse search.
3	-	-	GND(A)	Grounded.
4	I	Hi	TEST	Not used. Grounded.
5	O	(Pulse)	CLOCK OUT	Generate 32kHz clock pulse.
6	I	(Pulse)	CLOCK IN	
7	-	-	GND	Grounded.
8	I	(Pulse)	OSC IN	Generate 8MHz clock pulse.
9	O	(Pulse)	OSC OUT	
10	I	Lo	RESET(Lo)	Initializes IC901.
11	I	Lo	WAKEUP(Lo)	Wakes IC901 up when the EJECT or RECORD switch is pressed or when the CAMERA/VIDEO switch is set to the other than "OFF".
12	I	(Pulse)	SW25Hz	Switches the video heads and detects the cylinder lock.
13	I	Lo	BACKUP(Lo)	Enters the backup mode to save the power consumption when the battery terminal voltage is less than approx. 4.2V.

Pin No.	I/O	Active Level	Abbreviation	Function
14	I	(Pulse)	IR REMOTE	Detetcs the coded data transmitted from the IR remote controller.
15	I	Lo	ATF DATA REQ.	Inputs the request for detecting the ATF error data from the servo control circuit (IC601: SERVO).
16	I	(Pulse)	SP/LP DET	Not used.
17	I	(Pulse)	CAPST.FG	Inputs the comparison signal for the capstan speed control during recording and playback. Drives the linear tape counter.
18	I	Lo	EJECT SW(Lo)	Detects the EJECT switch and opens the cassette holder.
19	I	Lo	VCR SW(Lo)	Detects that the CAMERA/VIDEO switch is set to "VIDEO" and generates powers required for the VCR circuit.
20	I	Lo	CAMERA SW(Lo)	Detects that the CAMERA/VIDEO switch is set to "CAMERA" and generates powers required for the camera circuit.
21	I	Lo	Hi8 SW(Lo)	Detects that the Hi8 switch is set to "AUTO".
22	O	Hi	VCR ON	Turns the switching regulator on.
23	O	Hi/Lo	CAMERA/AV IN (Lo)	Input signal selection output. However in this model, only the camera recording is provided, and the output is fixed to "Hi".
24	I	Hi	TEST PROGRAM	Test programme runs when the input is Hi".
25	O	Hi	REC LED (REMOTE)	Lights a record indicator located on the remote controller connected to the AV output connector (JK200: AV OUT), during recording.
26	O	Hi	REC LED	Lights the record indicator during recording.
27	O	Hi	PB	Sets the video signal processing circuit to the playback.
28	O	Hi/Lo	SYNCHRO.-EDIT	Controls the record and record pause modes of the VTR connected to JK200, during dubbing.
29	O	Hi	MUTE	Mutes the audio signal when the mode is changed and when the mode is trick playback.
30	I	Hi	MONO IN	Not used. Open.
31	I	Hi	TAB SW	Detects the tab on the cassette tape and inhibits the recording.
32	I	Hi/Lo	MECHA.STATE0	Detect the mechanism state.
33	I	Hi/Lo	MECHA.STATE1	
34	I	Hi/Lo	MECHA.STATE2	
35	I	Lo	CASSETTE SW Lo	Detects that the cassette holder is closed and drives the loading motor and changes the mechanism state to the L.STOP mode.
36	I	Hi/Lo	ME/MP(Lo)	Detects the kinds of the tape loaded.
37	I	Hi	HB	Detects the modes during playback. The mode is detected by the luma signal processing circuit (IC301: LUMA PROCESS).
38	I	Hi/Lo	NTSC/PAL(Lo)	Sets internal mode (NTSC/PAL). Grounded.
39	I	Lo	Hi8 MP(Lo)	Detects that the Hi8 MP tape is loaded.
40	O	Hi	FADE	Controls the rapid charging of the fade control circuit in the audio signal processing circuit.
41	I	(Pulse)	S.REEL	Detects the reel lock of the supply reel disk, calculates the tape remaining time and removes the tape slack.
42	I	(Pulse)	T.REEL	Detects the reel lock of the takeup reel disk.
43	I	Lo	AV IN(Lo)	Not used. The input is fixed to "Hi" in this model.
44	I	Lo	CAPST.LOCK(Lo)	Inputs the lock signal of the capstan speed control from IC601.
45	I	-	-	Not used.
46	I	(Pulse)	SW12.5Hz	Detects the channel with the SW25Hz to select the ATF pilot signals.
47	O	Hi	CAPST.BRAKE	Brakes the capstan motor when the mode is changed to the playback from the search or still.
48	O	Hi	CAPST.ACCEL.	Increases the capstan motor speed when the still mode is released.
49	O	Hi	CAPST.REV	Reverses the capstan motor.
50	O	Lo	CAPST.STANDBY (Lo)	Stops the capstan motor to save the power concumption.
51	O	Hi	CAPST.TRANSIENT	Increases the capstan speed control output to improve the transient response of the capstan motor.
52	O	Hi	CYL.REV	Not used. Open.
53	O	Hi	LM SLOW	
54	I	Lo	REC SW(Lo)	Detects the record start/stop switch.
55	-	-	B + (5V/3V)	5V/3V (backup) power supply input.
56	O	Lo	PRECONT.(Lo)	Sets the ATF circuit (IC602) to the playback mode during playback.

Pin No.	I/O	Active Level	Abbreviation	Function
57	O	Hi	SQUELCH	Inhibits the video signal output when the mode is changed.
58	O	Hi	REC MUTE	Inhibits the recording during assemble recording.
59	O	Hi/Lo	SP/LP(Lo)	Controls the tape speed, however in this model, the out is fixed to "Hi".
60	O	(Pulse)	END LED	Pulse-drives the end LED for detecting the tape end.
61	O	Hi	FLE ON	Activates the flying erase head during recording and dubbing.
62	O	Hi	REC HB	Changes the mode of the video signal processing circuit when the HB mode is detected during recording.
63	O	Hi	CS(CG)	Activates the data communications with the chatacter signal generator (IC904).
64	O	(Pulse)	ATF SERVO	Outputs the ATF servo control signal.
65	I	(Pulse)	CLOCK(D-S)	Communicates with the digital microprocessor (IC1105).
66	I	(Pulse)	DATA(D-S)	
67	O	(Pulse)	DATA(S-D)	
71	I	Hi	CS(S)	
68	O	(Pulse)	CLOCK(S-CG/SRV/ATF/A)	Transfer data to IC904, IC601, IC602 and IC401.
70	O	(Pulse)	DATA(S-CG/SRV/ATF/A)	
69	O	Lo	CS(Lo(ATF))	Activates the data communications with IC602.
72	O	Hi	UNLOAD	Controls the loading motor.
73	O	Hi	LOAD	
74	-	-	B+(5V)	Connected to 5V.
75	I	0V - 5V	VCR KEY1(A/D)	Detects the operation keys by comparing the reference voltage and the input voltage which corresponds the operated key.
76	I	0V - 5V	VCR KEY2(A/D)	
77	I	0V - 5V	BATT./SHORT.(A/D)	Detects the battery terminal voltage and short-circuits.
78	I	0V - 5V	SP/LP DET(A/D)	Detects the tape speed.
79	I	0V - 5V	ATF ERROR(A/D)	Inputs the ATF error signal, sample-holds it and controls the capstan phase during playback.
80	I	0V - 5V	DEW(A/D)	Detects the condensation.

TROUBLESHOOTING OF PARTS UNDER IC301 (Y MODULE IC)

The following shows the parts mounted under the Y module IC on the main circuit board and describes troubleshooting concerning them.

1. PARTS IN VIDEO CIRCUITS

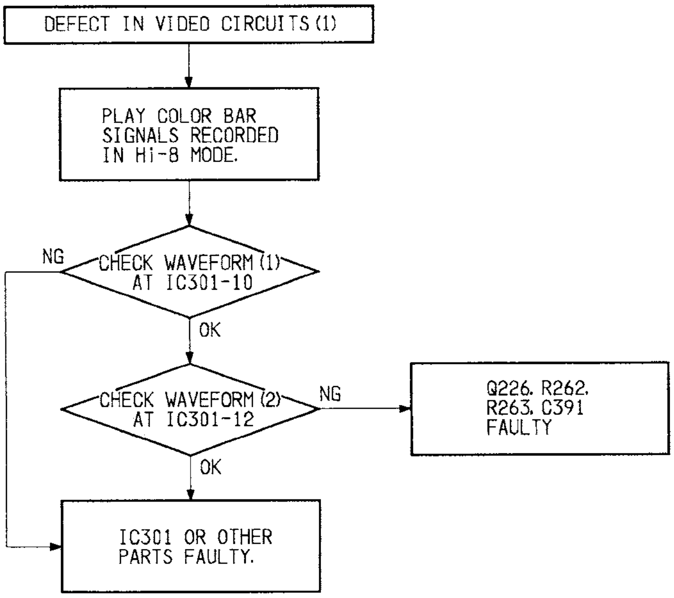
The table below shows the major symptoms occurring when parts in the video circuits under IC301 become defective.
Use the table together with the troubleshooting flowcharts for the video circuits when servicing.

1-1. Major symptoms when defects occur

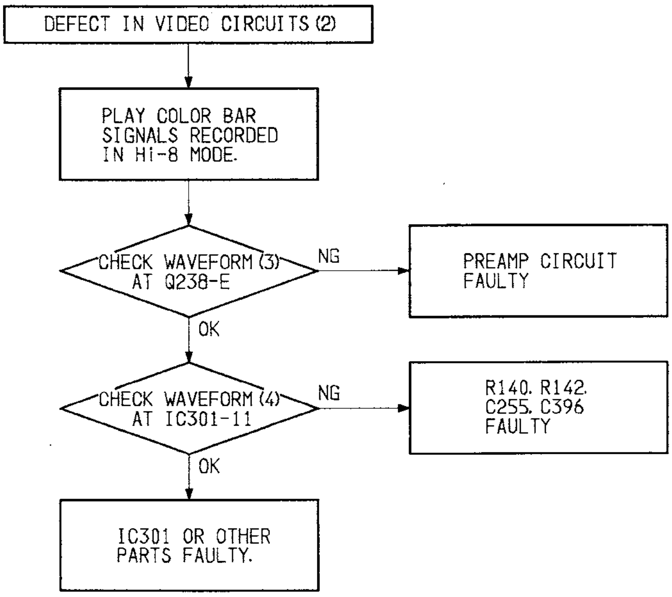
No.	Symptoms when defects occur	Defective parts	Location of parts in schematic and normal circuit operation
(1)	• Defective playback picture. • Defective dropout compensation. • Oscillations when a blank tape is played.	Q226, R262, R263, C391	• Parts connected to IC301 pins 11 and 12 • Decreases the playback FM signal level by 1dB during Hi-8 MP $\overline{\text{MUTE}}$.
(2)	• Defective playback picture • Abnormal noise bars during trick play	R140, R142, C235, C396	• Parts connected to IC301 pin 11. • Playback FM signal line.
(3)	• Defective dropout compensation during play. • Defective Y/C separation during recording (only with external input).	R213, R304, C310,	• Parts connected to IC301 pin 18. • The video signal from the CCD in IC301 passes through. • Cuts off chroma signals and applies a bias voltage via resistors.
(4)	• Defective E-E video output when an external input is applied.	Q304, R144, R145, R146, R148	• Parts connected to IC301 pin 43. • Attenuates the video signal output from IC301 to match its level.
(5)	• Defective Y/C separation during recording (only with external input).	Q322, R150, R162, R301, C392, C395	• Parts connected to IC301 pin 33. • Buffer amp for the video signal output from IC301.
(6)	• Abnormality when recording (with external input). • Crosstalk occurs during play (with external input).	Q371(※2), R371	• Parts connected to IC301 pin 45. • The external video input signal passes through. • Shuts off the external video input signal during play.

1-2 Troubleshooting
1-2 Störungsbeseitigung
1-2 Dépannage

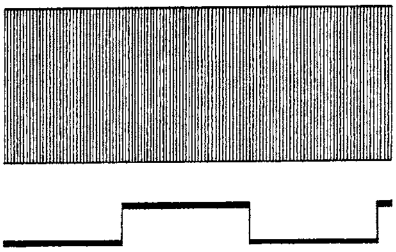
- **Defect in video circuits (1)**
- **Defekt in den Video-Schaltkreisen (1)**
- **Anomalie des circuits vidéo (1)**


DEFECT IN VIDEO CIRCUITS (1)
PLAY COLOR BAR SIGNALS RECORDED IN Hi-8 MODE.
CHECK WAVEFORM (1) AT IC301-10
NG
OK
CHECK WAVEFORM (2) AT IC301-12
NG
Q226. R262. R263. C391 FAULTY
OK
IC301 OR OTHER PARTS FAULTY.

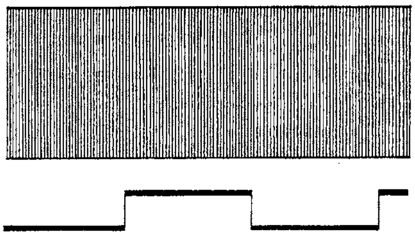
- **Defect in vidéo circuits (2)**
- **Defekt in den Video-Schaltkreisen (2)**
- **Anomalie des circuits vidéo (2)**


DEFECT IN VIDEO CIRCUITS (2)
PLAY COLOR BAR SIGNALS RECORDED IN Hi-8 MODE.
CHECK WAVEFORM (3) AT Q238-E
NG
PREAMP CIRCUIT FAULTY
OK
CHECK WAVEFORM (4) AT IC301-11
NG
R140. R142. C255. C396 FAULTY
OK
IC301 OR OTHER PARTS FAULTY.

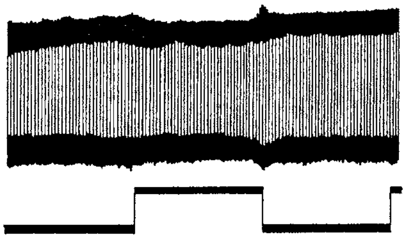
WAVEFORM (1) 0.1V/5msec. 440mVp-p



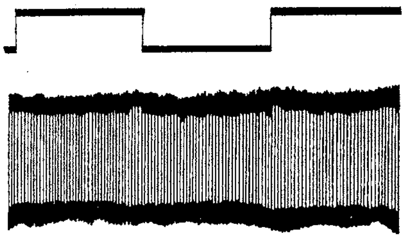
WAVEFORM (2) 0.1V/5msec. 390mVp-p



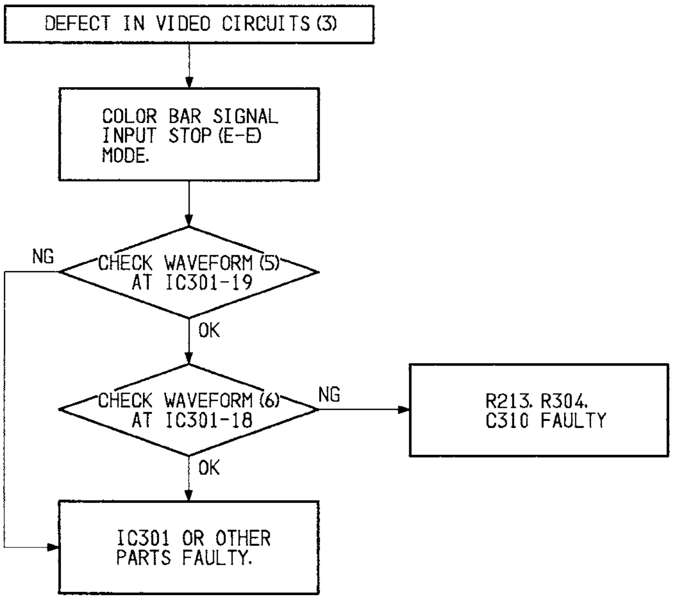
WAVEFORM (3) 0.1V/5msec. 420mVp-p



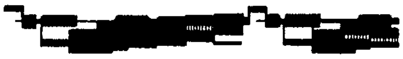
WAVEFORM (4) 0.1V/5msec. 390mVp-p



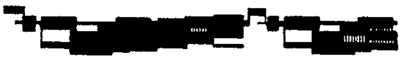
- **Defect in video circuits (3)**
- **Defekt in den Video-Schaltkreisen (3)**
- **Anomalie des circuits vidéo (3)**


DEFECT IN VIDEO CIRCUITS (3)
COLOR BAR SIGNAL INPUT STOP (E-E) MODE.
CHECK WAVEFORM (5) AT IC301-19
NG
OK
CHECK WAVEFORM (6) AT IC301-18
NG
R213. R304. C310 FAULTY
OK
IC301 OR OTHER PARTS FAULTY.

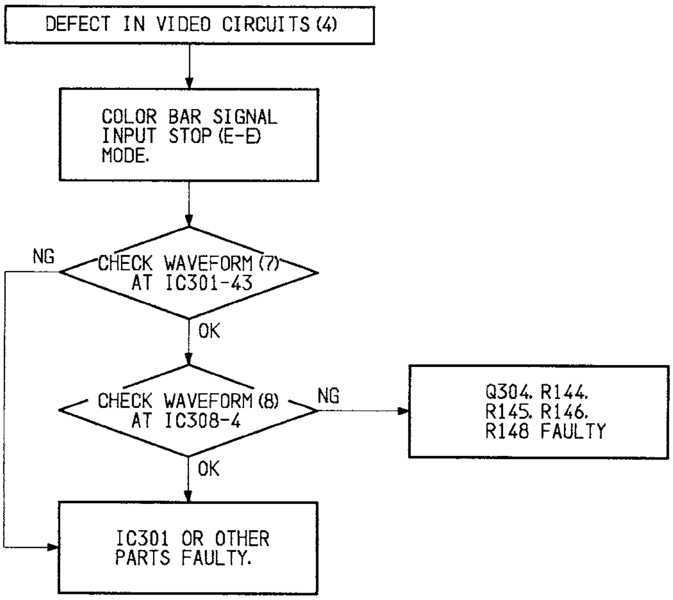
WAVEFORM (5) 0.5V/10µsec. 0.5Vp-p (Centre: 1.9V)



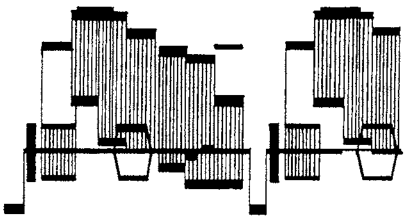
WAVEFORM (6) 0.5V/10µsec. 0.5Vp-p (Centre: 2.6V)



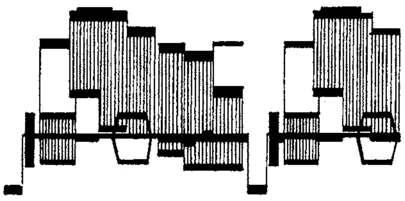
- **Defect in video circuits (4)**
- **Defekt in den Video-Schaltkreisen (4)**
- **Anomalie des circuits vidéo (4)**


DEFECT IN VIDEO CIRCUITS (4)
COLOR BAR SIGNAL INPUT STOP (E-E) MODE.
CHECK WAVEFORM (7) AT IC301-43
NG
OK
CHECK WAVEFORM (8) AT IC308-4
NG
Q304. R144. R145. R146. R148 FAULTY
OK
IC301 OR OTHER PARTS FAULTY.

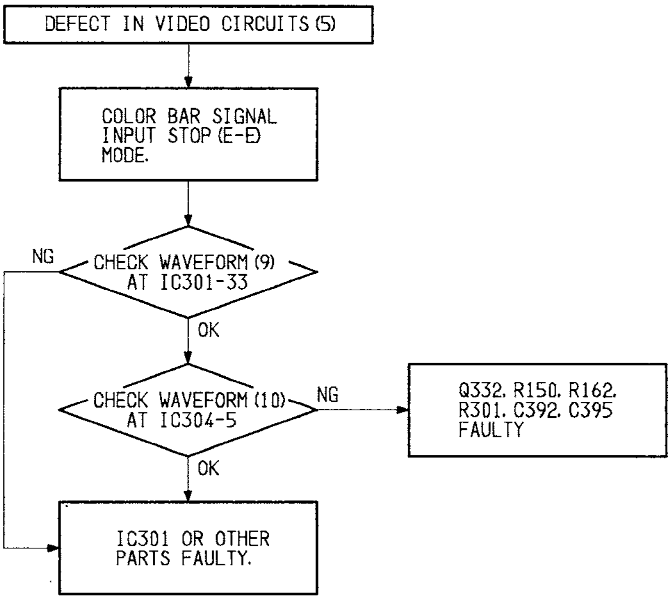
WAVEFORM (7) 0.2V/10µsec. 1.1Vp-p



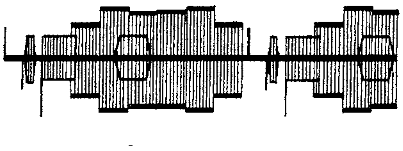
WAVEFORM (8) 0.2V/10µsec. 1.0Vp-p



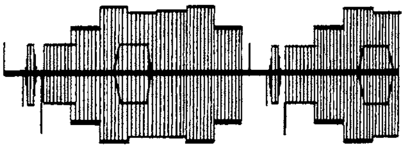
- **Defect in video circuits (5)**
- **Defekt in den Video-Schaltkreisen (5)**
- **Anomalie des circuits vidéo (5)**


DEFECT IN VIDEO CIRCUITS (5)
COLOR BAR SIGNAL INPUT STOP (E-E) MODE.
NG
CHECK WAVEFORM (9) AT IC301-33
OK
CHECK WAVEFORM (10) AT IC304-5
NG
Q332, R150, R162, R301, C392, C395 FAULTY
OK
IC301 OR OTHER PARTS FAULTY.

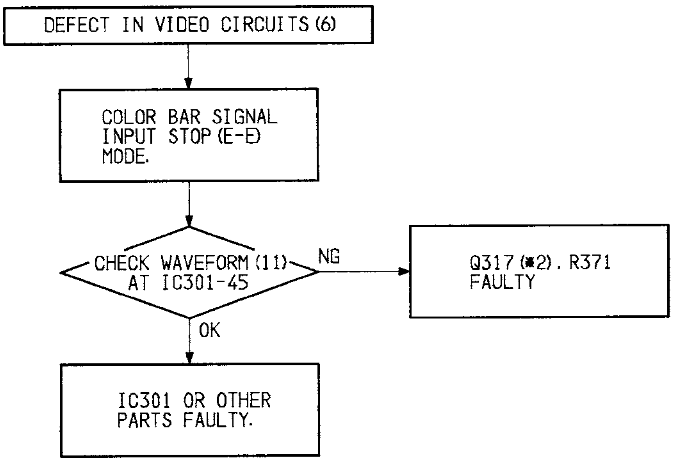
WAVEFORM (9) 0.2V/10µsec. (BURST: 0.3Vp-p)



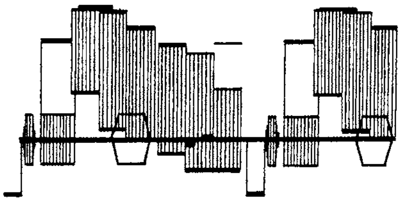
WAVEFORM (10) 0.2V/10µsec. (BURST: 0.3Vp-p)



- **Defect in video circuits (6)**
- **Defekt in den Video-Schaltkreisen (6)**
- **Anomalie des circuits vidéo (6)**


DEFECT IN VIDEO CIRCUITS (6)
COLOR BAR SIGNAL INPUT STOP (E-E) MODE.
CHECK WAVEFORM (11) AT IC301-45
NG
Q317 (*2), R371 FAULTY
OK
IC301 OR OTHER PARTS FAULTY.

WAVEFORM (11) 0.2V/10µsec. 1.0Vp-p



2. PARTS IN CONTROL CIRCUITS

The table below shows the major symptoms occurring when parts in the control circuits under IC301 become defective. Use the table together with the troubleshooting flowcharts for the control circuits when servicing.

2-1. Major symptoms when defects occur

No.	Symptoms when defects occur	Defective parts	Location of parts in schematic and normal circuit operation
(1)	• Recording in Hi-8 mode not possible • Defective playback picture	Q335	• Parts connected to IC301 pin 11 • Sets IC301 pin 11 to "Lo" when recording on Hi-8 tape in the Hi-8 mode.
(2)	• Defective dropout compensation during play • Defective tint during play • Defective EE video output when external input is applied	Q308, D301, R313	• Parts connected to IC301 pin 23. • Controls the voltages at two CCDs in IC301.
(3)	• Abnormality in E-E picture and recorded picture	Q301, Q302, R143, R303	• Parts connected to IC301 pin 44. • Inverts the CAM/LINE signal.
(4)	• No playback picture	Q305, Q306, R307, R308	• Parts connected to IC301 pin 7 and IC901 pin 57. • PB signal inverter circuit.
(5)	• Horizontal noise appears in playback picture.	Q310, R315	• Parts connected to IC301 pin 46 via Q309 and C314. • Turns Q309 on during play and applies the reference voltage (V REF) with low impedance to IC301 pin 32 (VIDEO Vcc 2) through C314.

2. TEILE IN DEN STEUERKREISEN

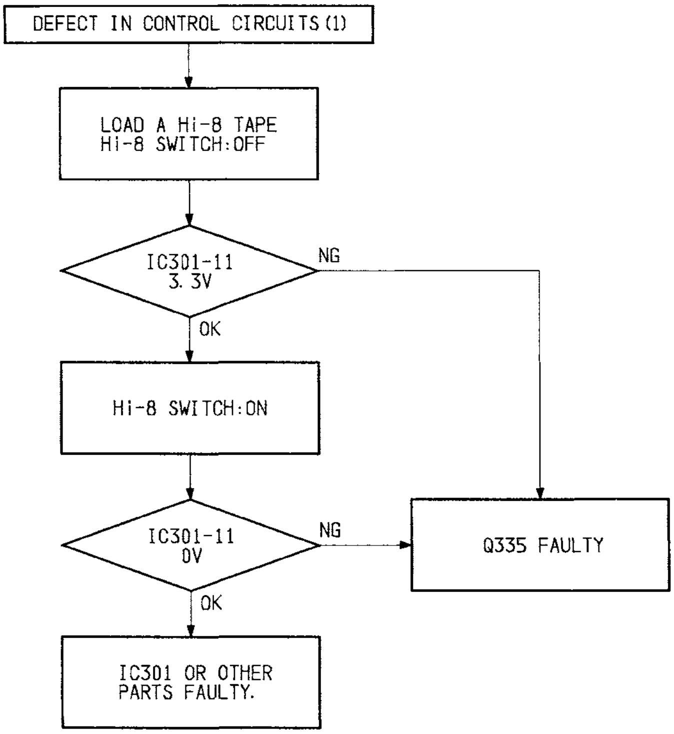
Die nachfolgende Tabelle zxeigt die wichtigsten Symptome, die auftreten, wenn die Steuerkreise unter dem IC301 defekt sind. Diese Tabelle gemeinsam mit dem Störungsbeseitigungs-Flußdiagramm für die Steuerkreise verwenden, wenn Wartungsarbeiten an diesen ausgeführt werden.

2-1 Wichtige Symptome beim Auftreten von Defekten

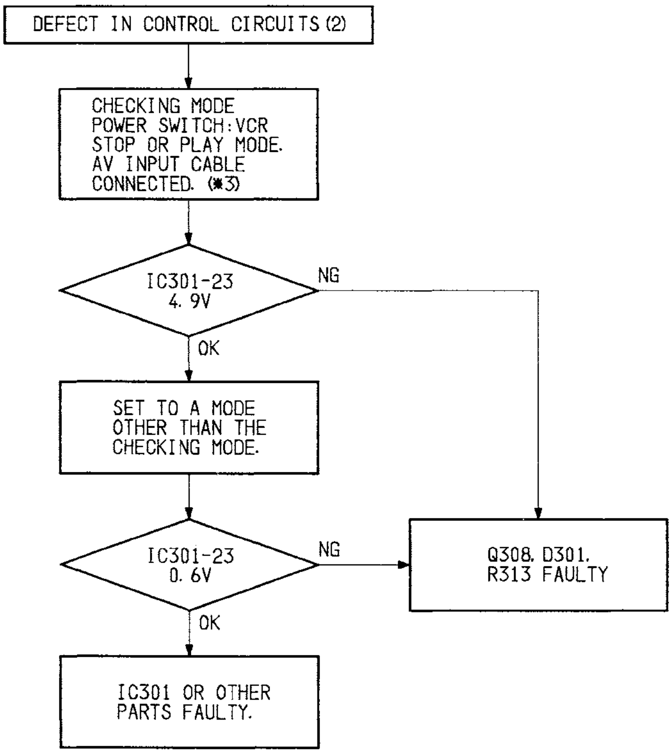
Nr.	Symptome beim Auftreten von Defekten	Defekte Teile	Anordnung der Teile in den Schaltplänen und normaler Schaltkreisbetrieb
(1)	• Aufnahme in dem Hi-8 Modus nicht möglich. • Wiedergabebild defekt.	Q335	• Teile, angeschlossen an IC301 Stift 11. • Stellt den IC301 Stift 11 auf "Lo", wenn Aufnahme auf dem Hi-8 Band in dem Hi-8 Modus erfolgt.
(2)	• Signalausfallkompensation während der Wiedergabe defekt. • Farbton während der Wiedergabe defekt. • E-zu-E Video-Ausgang defekt, wenn externer Eingang angelegt wird.	Q308, D301, R313	• Teile, angeschlossen an IC301 Stift 23. • Steuert die Spannungen an zwei CCDs in IC301.
(3)	• Abnormalität im E-zu-E Bild und im aufgenommenen Bild.	Q301, Q302, R143, R303	• Teile, angeschlossen an IC301 Stift 44. • Invertiert das CAM/LINE-Signal.
(4)	• Kein Wiedergabebild	Q305, Q306, R307, R308	• Teile, angeschlossen an IC301 Stift 7 und IC901 Stift 57. • Wiedergabesignal-Inverter-Schaltkreis.
(5)	• Horizontales Rauschen erscheint im Wiedergabebild.	Q310, R315	• Teile, angeschlossen an IC301 Stift 46 über Q309 und C314. • Schaltet Q309 während der Wiedergabe ein und legt die Referenzspannung (V REF) mit niedriger Impedanz an IC301 Stift 32 (VIDEO Vcc 2) über C314 an.

2-2 Troubleshooting
2-2 Störungsbeseitigung
2-2 Dépannage

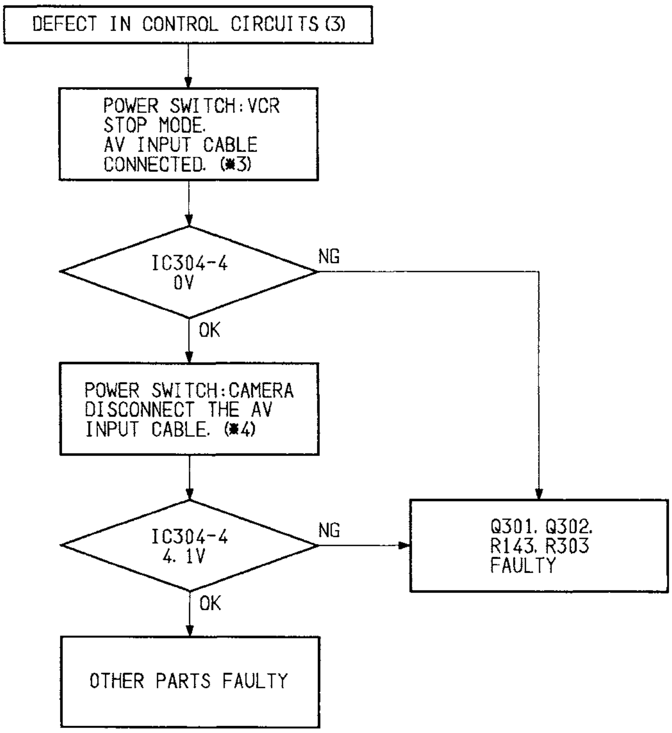
- **Defect in control circuits (1)**
- **Defekt in Steuerkreisen (1)**
- **Anomalie des circuits de commande (1)**


DEFECT IN CONTROL CIRCUITS (1)
LOAD A Hi-8 TAPE
Hi-8 SWITCH:OFF
IC301-11
3. 3V
NG
OK
Hi-8 SWITCH:ON
IC301-11
0V
NG
OK
Q335 FAULTY
IC301 OR OTHER PARTS FAULTY.

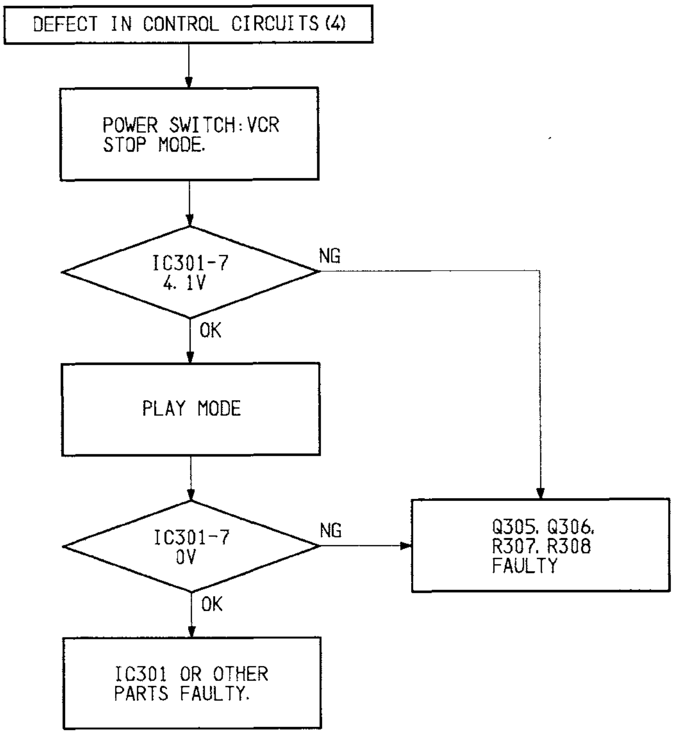
- **Defect in control circuits (2)**
- **Defekt in Steuerkreisen (2)**
- **Anomalie des circuits de commande (2)**


DEFECT IN CONTROL CIRCUITS (2)
CHECKING MODE
POWER SWITCH:VCR
STOP OR PLAY MODE.
AV INPUT CABLE
CONNECTED. (*3)
IC301-23
4. 9V
NG
OK
SET TO A MODE
OTHER THAN THE
CHECKING MODE.
IC301-23
0. 6V
NG
OK
Q308. D301.
R313 FAULTY
IC301 OR OTHER PARTS FAULTY.

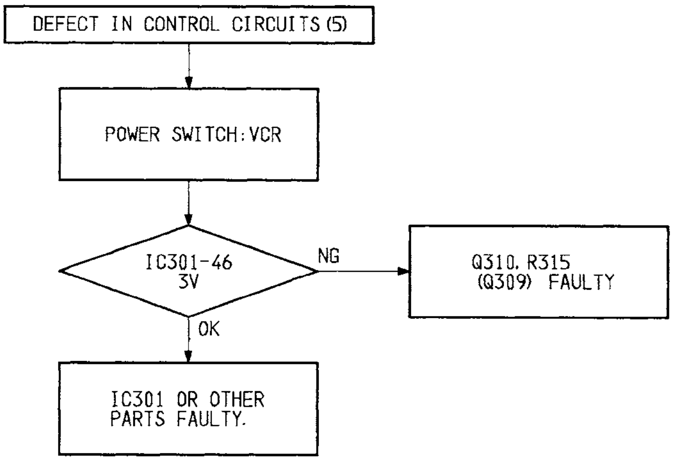
- **Defect in control circuits (3)**
- **Defekt in Steuerkreisen (3)**
- **Anomalie des circuits de commande (3)**


DEFECT IN CONTROL CIRCUITS (3)
POWER SWITCH:VCR
STOP MODE.
AV INPUT CABLE
CONNECTED. (*3)
IC304-4
0V
NG
OK
POWER SWITCH:CAMERA
DISCONNECT THE AV
INPUT CABLE. (*4)
IC304-4
4. 1V
NG
OK
Q301. Q302.
R143. R303
FAULTY
OTHER PARTS FAULTY

- **Defect in control circuits (4)**
- **Defekt in Steuerkreisen (4)**
- **Anomalie des circuits de commande (4)**


DEFECT IN CONTROL CIRCUITS (4)
POWER SWITCH:VCR
STOP MODE.
IC301-7
4. 1V
NG
OK
PLAY MODE
IC301-7
0V
NG
OK
Q305. Q306.
R307. R308
FAULTY
IC301 OR OTHER PARTS FAULTY.

- **Defect in control circuits (5)**
- **Defekt in Steuerkreisen (5)**
- **Anomalie des circuits de commande (5)**


DEFECT IN CONTROL CIRCUITS (5)
POWER SWITCH:VCR
IC301-46
3V
NG
Q310, R315
(Q309) FAULTY
OK
IC301 OR OTHER
PARTS FAULTY.

3. PARTS IN DC OPERATION CIRCUIT

The table below shows the major symptoms occurring when parts in the DC operation circuit consisting of capacitors under IC301 become defective. Use the table together with the troubleshooting flowcharts for the DC operation circuit when servicing.

3-1 Major symptoms when defects occur

No.	Symptoms when defects occur	Defective parts	Location of parts in schematic and normal circuit operation
(1)	• Defective playback picture	R302, C397	• Parts connected to IC301-5. • Control voltage of FM AGC circuit.
(2)	• Defective playback picture	C308	• Parts connected to IC301-13. • DC balanced circuit to generate non-correlative pulses (at IC301 pin 28).

3. TEILE IM GLEICHSTROM-BETRIEBSSCHALTKREIS

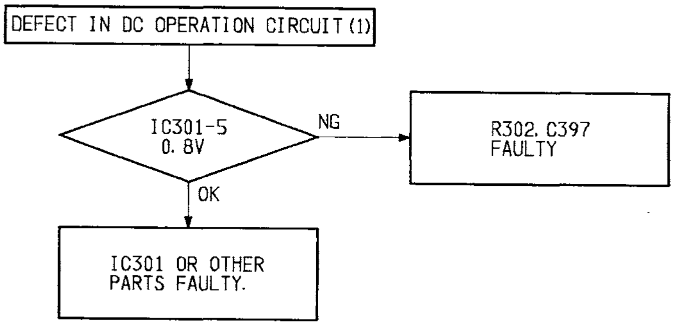
Die nachfolgende Tabelle zeigt die wichtigsten Symptome, die auftreten, wenn Teile in dem Gleichstrom-Betriebsschaltkreis, der aus Kondensatoren besteht, unter dem IC301 defekt sind. Diese Tabelle gemeinsam mit den Störungsbeseitigungs-Flußdiagrammen für den Gleichstrom-Betriebsschaltkreis verwenden, wenn Wartungsarbeiten ausgeführt werden.

3-1 Wichtige Symptome beim Auftreten von Defekten

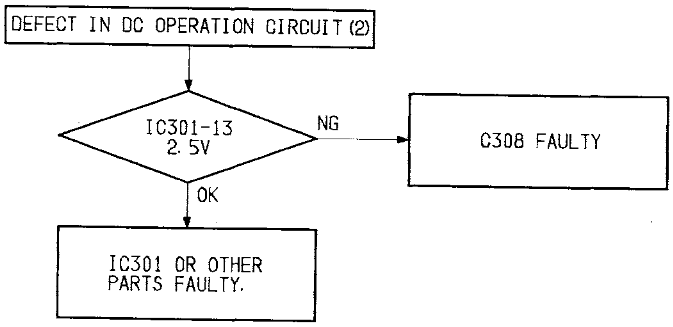
Nr.	Symptome beim Auftreten von Defekten	Defekte Teile	Anordnung der Teile in den Schaltplänen und normaler Schaltkreisbetrieb
(1)	• Wiedergabebild defekt.	R302, C397	• Teile, angeschlossen an IC301-5. • Steuerspannung des FM AGC Schaltkreises.
(2)	• Wiedergabebild defekt. • E-zu-E Video-Ausgang defekt, wenn externer Eingang angelegt wird.	C308	• Teile, angeschlossen an IC301-13. • Gleichstrom-Balanceschaltkreis generiert nicht korrelative Impulse (an IC301 Stift 28).

3-2 Troubleshooting
3-2 Störungsbeseitigung
3-2 Dépannage

- **Defect in DC operation circuit (1)**
- **Defekt im Gleichstrom-Betriebsschaltkreis (1)**
- **Anomalie du circuit opérationnel à courant continu (1)**



- **Defect in DC operation circuit (2)**
- **Defekt im Gleichstrom-Betriebsschaltkreis (2)**
- **Anomalie du circuit opérationnel à courant continu (2)**



TROUBLESHOOTING OF DC-DC CONVERTER

SIMPLIFIED CIRCUIT DESCRIPTION

Use the following description for reference when servicing the DC-DC converter.

1. DC-DC converter system

The DC-DC converter has the following outputs.

- *VTR power supplies*
  - *5V system* — *5V fixed outputs*
    - *5V1: Power supply of video circuits.*
    - *5V2: Power supply of audio circuits.*
    - *5V3: Power supply of system control/ servo circuits, power supply of camera's microprocessor.*
    - *5V4: Power supply of END LEDs.*
  - *Varied outputs*
    - *Cylinder motor Vs (CYL) output.*
    - *Capstan motor Vs (CAP) output.*
- *Camera power supplies* — *Fixed outputs*
  - *C5V: 5V power supply of camera.*
  - *Step-up power supplies*
    - *9V power supply of camera.*
    - *20V power supply of camera.*
    - *-9V power supply of camera.*

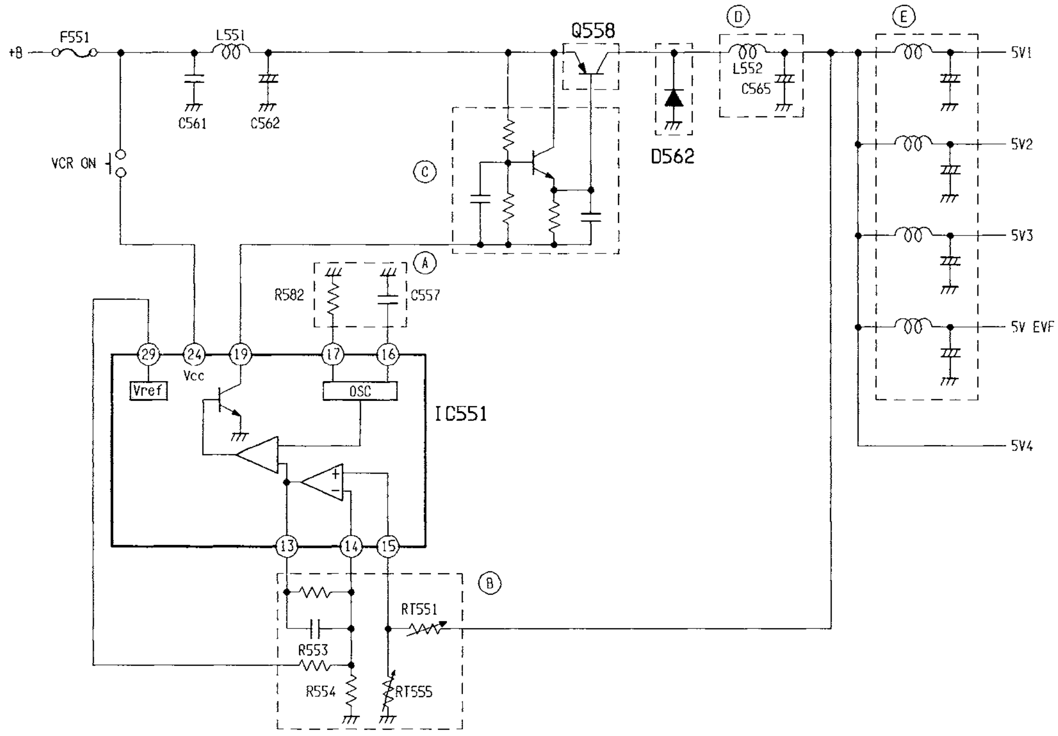
- The VTR power supplies are activated by the VTR ON (Hi) signal from IC901.
- The camera power supplies are activated by the VTR ON (Hi) signal and the CAMERA (Hi) signal from IC1105 in the camera.
- The motor output voltages correspond to the CYL SRV and CAP SRV voltages and are applied to each Vs.

2. Circuit system

The DC-DC converter consists of multiple-output circuits.
It uses a step-down chopper for the 5V, motor and C5V power supplies and a step-up transformer for the step-up power supplies.

STEP-DOWN CHOPPER

The 5V, motor and C5V power supplies have almost the same circuit configuration.
The following describes the 5V power supply.



The above shows a schematic circuit diagram of the 5V power supply. As can be seen, the DC-DC converter forms a loop, so a defect in this will result in no output.

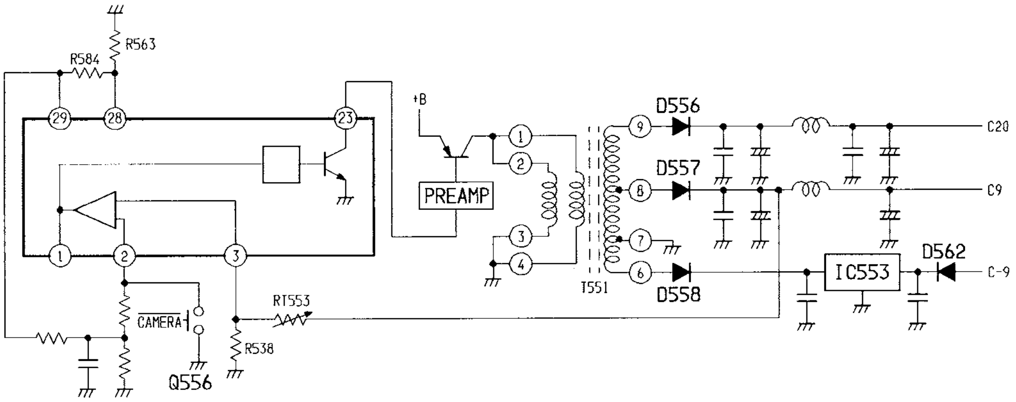
- The capacitor and resistor in section (A) set the time constant that determines the oscillation frequency of the triangular pulse used as a reference for switching. The oscillation frequency is approx. 400kHz. The triangular pulse can be monitored at IC551 pin 16. If the frequency of the triangular pulse drifts, the output ripple may be large or beats may occur from L552. The triangular pulse is always generated in any state when the VTR ON signal is "Hi" and Vcc is applied to IC551 pin 24.
- IC551 pin 29 is a reference voltage (Vref) output pin that always generates 2.5V±0.1V DC.
- Section (B) is an error amplifier which determines the output voltage from the feedback voltage at RT551 and RT555 and the voltage obtained by dividing Vref through R553 and R554. The output voltage (Vo) is calculated by the following formula.

$$Vo = \frac{R554}{R553+R554} \bullet Vref \bullet \frac{RT551+RT555}{RT555} \quad (V)$$

  If the output voltage drifts, check this section.
  The output voltage is adjusted by 5V1 to 5.05V±0.05V.
- Section (C) is a predrive circuit which drives Q558. If this circuit becomes defective, sagging or overshoot/undershoot occurs in the output waveform at the Q558's collector.
- Q558 is a switching transistor which is easily damaged by a short-circuit in the output, etc.
- D562 is a so-called flywheel diode which performs the chopper rectification. If this diode is open, the amplitude of the switching waveform (at Q558's collector) becomes extremely high, causing Q558 to break down.
- Sections (D) and (E) are ripple filters. If the output ripple is abnormal, check here.

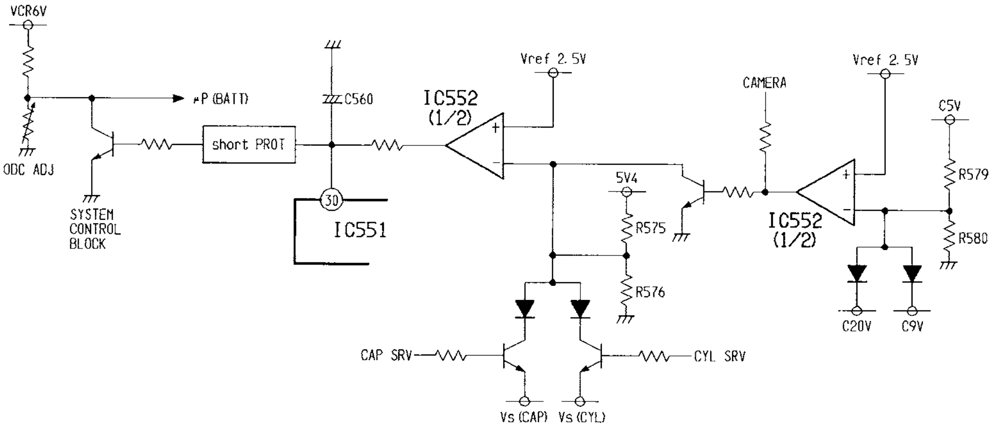
STEP-UP POWER SUPPLY

The triangular pulse generator, reference voltage, error amplifier and predrive circuit are the same as in the step-down chopper.


R563
R584
29
28
23
1
2
3
+B
PREAMP
1
2
3
4
T551
D556
9
D557
8
7
6
D558
C20
C9
IC553
D562
C-9
RT553
CAMERA
R538
Q556

The above shows a schematic circuit diagram of the step-up power supply.
When CAMERA is "Hi", Q556 turns off (open) and applies a reference voltage to IC551 pin 2 to start operation (same for the C5V power supply).
If only the camera output is not present, check the parts described above.
R583 and R584 are resistors that limit the pulse width.
A bifilar winding is used on the primary side of T551 to increase the output efficiency.
The output is boosted by the transformer, rectified by the diode and smoothed by the coils and capacitors.
When the diodes are open, no output is obtained.
If they are shorted, the ripples become large.
The C-9V power supply is rectified and stabilized by a three-terminal regulator.
D562 is a diode which adjusts the voltage of the C-9V power supply.

SHORT-CIRCUIT PROTECTOR

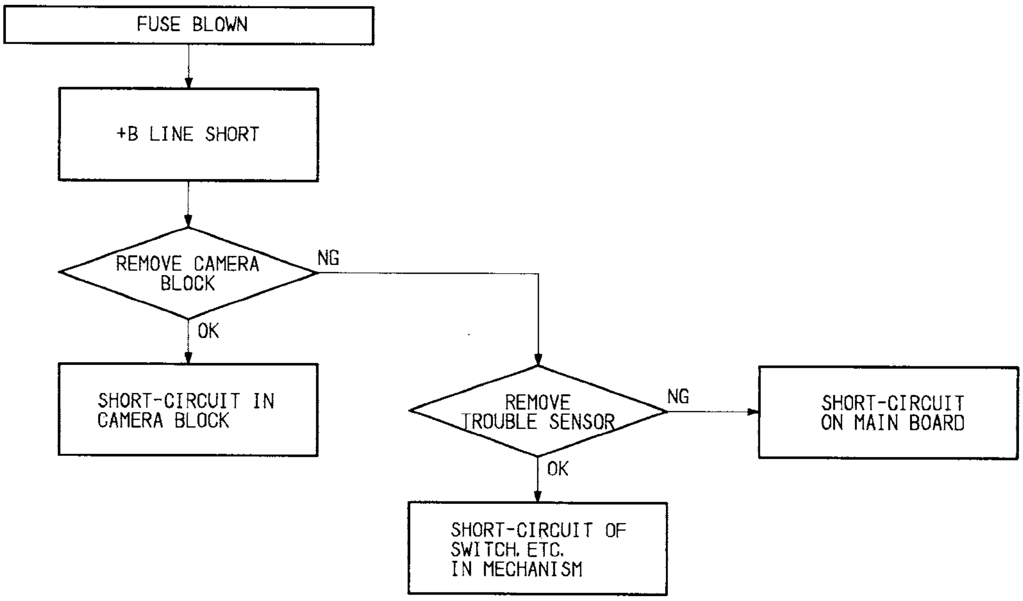

VCR6V
ODC ADJ
SYSTEM CONTROL BLOCK
+P (BATT)
short PROT
C560
30
IC551
IC552 (1/2)
Vref 2.5V
5V4
R575
R576
CAMERA
Vref 2.5V
IC552 (1/2)
C5V
R579
R580
C20V
C9V
CAP SRV
CYL SRV
Vs (CAP)
Vs (CYL)

The above diagram shows a short-circuit protector.
The short-circuit protector circuit shuts off the DC-DC converter approx. 50 ms after each output is shorted.
In normal operation, IC551 pin 30 is kept at "Lo" by a comparator.
When the output is shorted, the comparator output becomes open and the charging of C560 starts.
When IC551 pin 30 reaches 1V, IC551 pins 19-23 output "Hi" to stop the output.
Check the waveform at pin 30 to detect whether or not the output is shorted.
(Remove the power supply, then supply power again.)
When the short-circuit protector is operating, the transistor in the system control circuit turns on and sets the pin which detects the ODC voltage of the microprocessor to "Lo" to stop it from outputting the VTR ON signal.
If the VTR ON signal does not stop, the voltage at the port output appears on the VTR's 5V line as a voltage of approx. 2V.

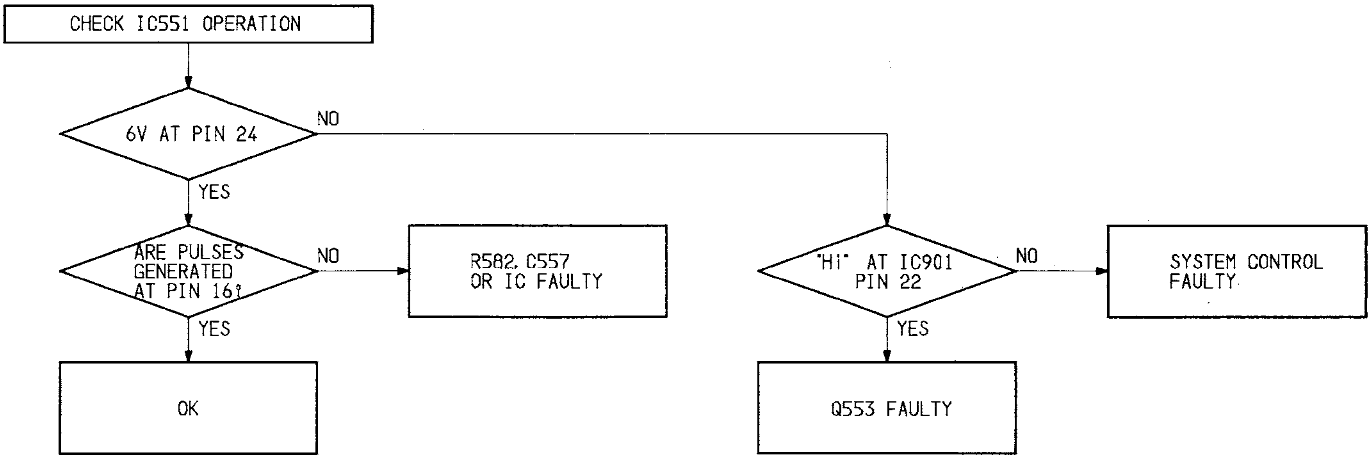
TROUBLESHOOTING
STÖRUNGSBESEITIGUNG
DÉPANNAGE

Check the flowcharts according to the symptoms.
Die folgenden Flußdiagramme in Abhängigkeit von den Symptomen überprüfen.
Vérifier les organigrammes en fonction des symptômes.

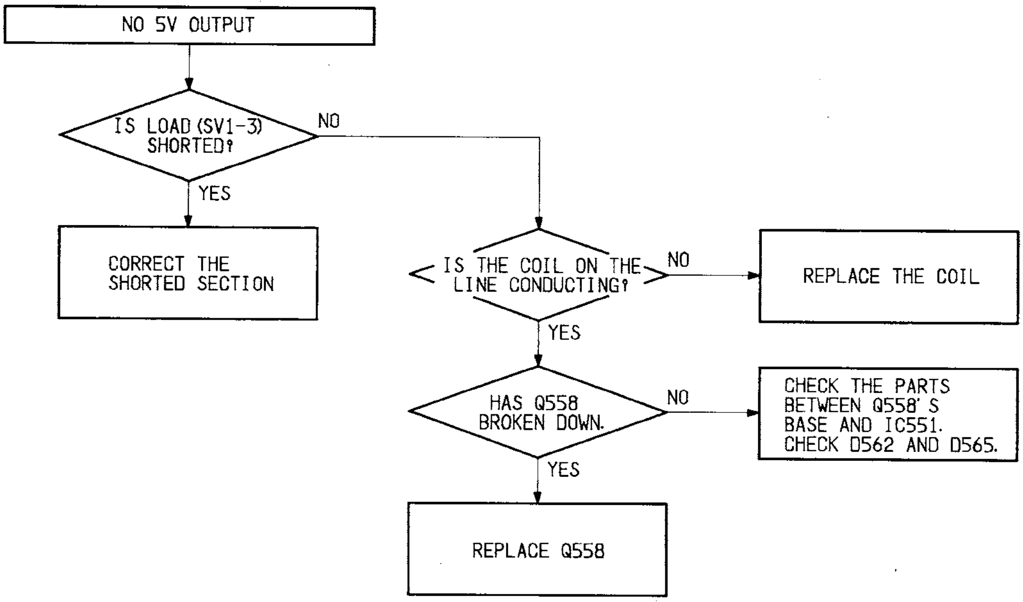
Symptom 1: Fuse blown
Symptom 1: Sicherung durchgebrannt
Symptôme 1: Destruction de fusible


FUSE BLOWN
+B LINE SHORT
REMOVE CAMERA BLOCK
NG
OK
SHORT-CIRCUIT IN CAMERA BLOCK
REMOVE TROUBLE SENSOR
NG
SHORT-CIRCUIT ON MAIN BOARD
OK
SHORT-CIRCUIT OF SWITCH, ETC. IN MECHANISM

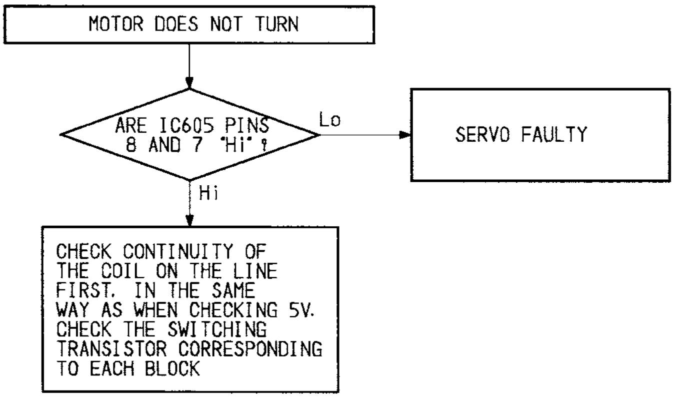
Symptom 2: Power not turned on (IC551 operation check)
Symptom 2: Stromversorgung nicht eingeschaltet (IC551 Betriebsprüfung)
Symptôme 2: Aucune mise sous tension (contrôle de fonctionnement de circuit intégré IC551)


CHECK IC551 OPERATION
6V AT PIN 24
NO
YES
ARE PULSES GENERATED AT PIN 16?
NO
R582, C557 OR IC FAULTY
YES
OK
"Hi" AT IC901 PIN 22
NO
SYSTEM CONTROL FAULTY
YES
Q553 FAULTY

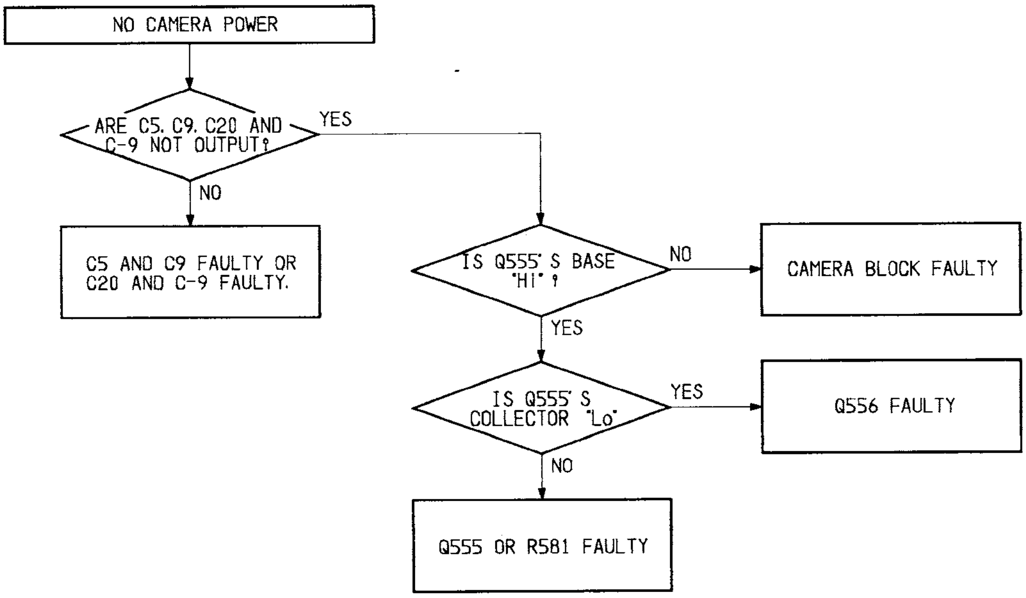
Symptom 3: No 5V output
Symptom 3: Kein 5 V Ausgang
Symptôme 3: Sortie 5 V non obtenue


NO 5V OUTPUT
IS LOAD (SV1-3) SHORTED?
NO
YES
CORRECT THE SHORTED SECTION
IS THE COIL ON THE LINE CONDUCTING?
NO
REPLACE THE COIL
YES
HAS Q558 BROKEN DOWN.
NO
CHECK THE PARTS BETWEEN Q558' S BASE AND IC551. CHECK D562 AND D565.
YES
REPLACE Q558

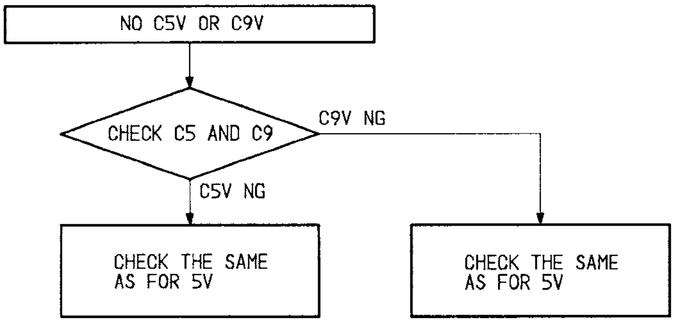
Symptom 4: Loading motor, capstan motor or cylinder does not turn.
Symptom 4: Lademotor, Capstanmotor oder Kopftrommel dreht nicht.
Symptôme 4: Le moteur de chargement, le moteur d'entraînement de cabestan ou le moteur d'entraînement de cylindre ne tourne pas.


MOTOR DOES NOT TURN
ARE IC605 PINS 8 AND 7 "Hi" ?
Lo
SERVO FAULTY
Hi
CHECK CONTINUITY OF THE COIL ON THE LINE FIRST. IN THE SAME WAY AS WHEN CHECKING 5V. CHECK THE SWITCHING TRANSISTOR CORRESPONDING TO EACH BLOCK

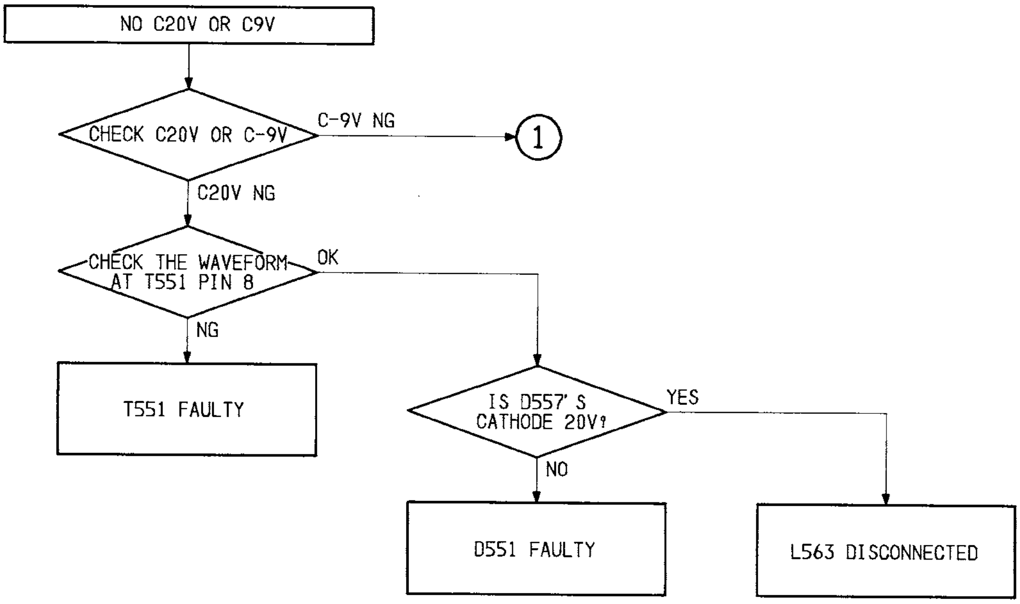
Symptom 5: Power only to the camera block is not turned on (1)
Symptom 5: Nur Stromversorgung des Kamera-Blocks wird nicht eingeschaltet (1)
Symptôme 5: Seule la section caméra vidéo n'est pas sous tension (1)

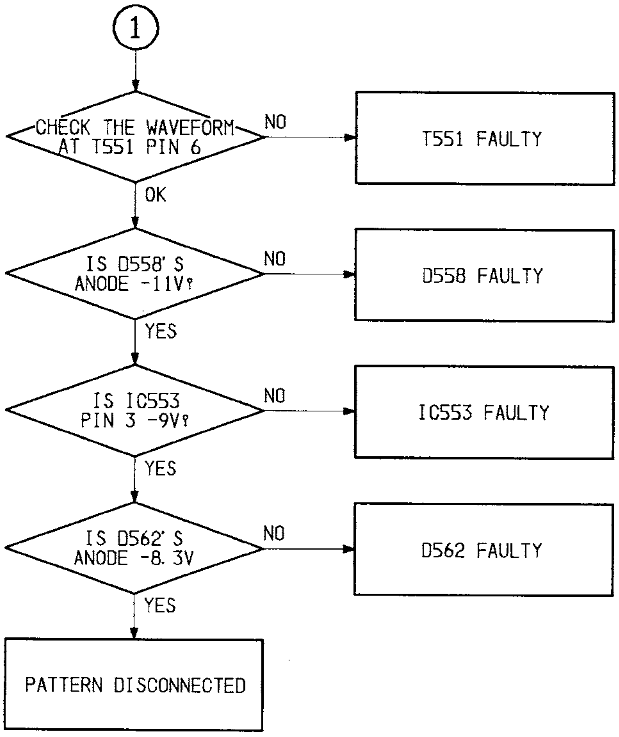

NO CAMERA POWER
ARE C5. C9. C20 AND C-9 NOT OUTPUT?
YES
NO
C5 AND C9 FAULTY OR C20 AND C-9 FAULTY.
IS Q555' S BASE "HI" ?
NO
CAMERA BLOCK FAULTY
YES
IS Q555' S COLLECTOR "Lo"
YES
Q556 FAULTY
NO
Q555 OR R581 FAULTY

Symptom 6: Power only to the camera block is not turned on (2)
Symptom 6: Nur Stromversorgung des Kamera-Blocks wird nicht eingeschaltet (2)
Symptôme 6: Seule la section caméra vidéo n'est pas sous tension (2)


NO C5V OR C9V
CHECK C5 AND C9
C9V NG
C5V NG
CHECK THE SAME AS FOR 5V
CHECK THE SAME AS FOR 5V

Symptom 7: Power only to the camera block is not turned on (3)
Symptom 7: Nur Stromversorgung des Kamera-Blocks wird nicht eingeschaltet (3)
Symptôme 7: Seule la section caméra vidéo n'est pas sous tension (3)


NO C20V OR C9V
CHECK C20V OR C-9V
C-9V NG
1
C20V NG
CHECK THE WAVEFORM AT T551 PIN 8
OK
NG
T551 FAULTY
IS D557'S CATHODE 20V?
YES
NO
D551 FAULTY
L563 DISCONNECTED


1
CHECK THE WAVEFORM AT T551 PIN 6
NO
T551 FAULTY
OK
IS D558'S ANODE -11V?
NO
D558 FAULTY
YES
IS IC553 PIN 3 -9V?
NO
IC553 FAULTY
YES
IS D562'S ANODE -8.3V
NO
D562 FAULTY
YES
PATTERN DISCONNECTED

HITACHI

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